Volume Twelve Number Two

THE VOLTA REVIEW

Formerly The Association Review

AN ILLUSTRATED MONTHLY
OF THINGS WORTH KNOWING

MAY 1910

IN THIS NUMBER

Conversing with the Blind Deaf
(Prof. Czily's Invention for Multiple Touch-Talk)

Nomads of the Sky

Physical Training and Mental Vigor
(Swedish Movements as an Adjunct to Oral Teaching)

The Price of War and the Way to Peace

"Suggestions to Teachers"
A New Department

THE VOLTA BUREAU
WASHINGTON, D. C.

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TABLE OF CONTENTS

	PAGE
A Letter from the Editor	71
Frontispiece. "On Earth, Peace"	76
Conversing with the Blind Deaf. By Prof. A. Czily. Four Illustrations	77
On the Living Sands of Ceran. By David Fairchild. With Illustration	86
Nomads of the Sky. By F. K. Noyes. Five Illustrations	87
Physical Training and Mental Vigor. By Grace G. Green	93
The Story of "Visible Speech." By M. Gardiner. Two Illustrations	99
Byways of Discovery. Seven Illustrations	103
Suggestions to Teachers. The Child's Sunday—Correcting Impediments of Speech.	111
The Price of War and the Way to Peace. By Kenneth Knowles. Two Illustrations.	113
Reminiscences of a Retired Educator. By Dr. Richard Elliott. II. Life in the English Provinces.	119
The Readers' Forum. How the April "REVIEW" Was Received—"The Deaf-and-Dumb" and the Census.	123
Contemporary Thought. A Theory of Gesticulation—Tele-Taction—Roetzer on Lip-Reading—Danish Teachers Meet.	125
The Universal Alphabetics. Conducted by M. Gardiner. Key to the Melville Bell Symbols—Cinderella (concluded)—Holy, Holy, Holy—Anna's Gift to Her Mother.	126
News and Comment. Three Illustrations.	131
Officers of the Association.	135
Revised Price List of Publications.	136

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The Volta Bureau for the Increase and Diffusion of Knowledge Relating to the Deaf.

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A LETTER FROM THE EDITOR

LAST month Mr. Fairchild wrote you about the magazine and the problems that it had to face. It was the intention to write you again this month and every month, but when the treasurer figured up what the first letter cost, he called a halt. When one writes a single letter he figures the cost—if the matter ever enters his head at all—at two cents for postage; but when one writes a thousand letters there are a dozen other important items to consider. The aggregate comes to an astonishing sum.

So it was not possible to continue the monthly letter, at least in that form.

A Personal Letter in Printed Form.

Then some one suggested that I might write you a *printed* letter every month in the magazine, giving you all the shop-talk of the office, as Mr. Fairchild's letter did, discussing with you the problems that confront us, and informing you of articles that are to appear in future numbers. This is the first of these letters. It is just as much a personal letter as any that was ever put into an envelope and sent under a two-cent stamp; it is meant for you just as much as if your actual street address appeared in the upper right-hand corner, and it allows us to save a great deal of money, which we can put into improving your magazine.

So I hope that you will treat this letter as you would the rest of your mail; read it with the same personal spirit, and answer it in the same manner.

What the Letter Is for.

The object of this monthly printed letter is to tell you just what we are doing with your magazine. We who are responsible to you for the magazine—directors, advisory council, executive committee, "magazine section," and editor—alike are anxious to produce a magazine that will please everybody. We probably can't do it, but at any rate we can try, and at the very least we can tell you what kind of a magazine "the office" thinks will please most members. Then, if that kind of a magazine doesn't please you, you can tell us so.

The Value of Constructive Criticism.

Won't you drop me a line every month? A postal card is enough, if you are busy. Just write on it which articles you liked in the current number, which articles you didn't like, *and why*. Above all, suggest ways for improving the magazine. All of us who are getting out the magazine are fairly hungry for solid, constructive criticism — not mere compliments or "roasts"—and we must have such criticism or your interests will suffer. Never mind if your criticism be unpalatable; we can stomach it.

The April Letters.

The April letters were most helpful and illuminating. I would have liked personally to thank every one of you who gave so generously and courteously of your scant leisure to write in about the April number, at Mr. Fairchild's request, but there was so much office work to do that it was impossible. It was a kindly and a gracious act to write; it showed a genuine friendliness; it showed a personal interest in the fortunes of your Association, and a willingness to co-operate in working out its problems.

Incidentally, it may interest you to know that, as a result of the nominations you sent in, the membership of the Association has shown a prompt and substantial increase.

Some of the April letters appear in "The Readers' Forum." It would have been a pleasure to print all of them, but there wasn't room.

Is the Magazine Technical?

Some writers have asked if the magazine would continue to be technical. What is the most emphatic way of saying yes? On behalf of all the managers, I say "Yes!" with all the positiveness that any one can crowd into those three letters. In the May number, for instance, there appear no less than three articles

which had been accepted for publication in THE REVIEW in that period when it was nothing if not technical. They are Dr. Elliott's valuable and entertaining reminiscences, Professor Czily's monograph, and Miss Green's illuminating contribution to an understanding of the relationship that exists between the deaf child's physical well-being and his mental development. I hope that these articles will prove readable to the lay members of the Association, to which we all belong, but they were not accepted in the first place, nor are they printed now, primarily for the benefit of the lay reader. They appear entirely on their merits as technical matter; merits which, in every instance, are so much enhanced by a lucid, simple style of writing, and, in the instance of Dr. Elliott, at least, by the ripened wisdom of a genial, broad-minded, and observant philosopher, whose "human quality" makes interesting everything that he touches. These articles, moreover, are in addition to the half dozen or so of monthly departments. Every one of these departments existed in the old REVIEW, and have been taken over bodily into the revised periodical. They consist of identically the same kind of matter as before, and, if there is any appearance of innovation about any of these departments, it is simply because the departments have been more specialized and more closely subdivided, so as to make reference to them more convenient.

Over half of our space in the May issue is given up, and will continue to be given up, to technical matter. With a larger type page, and 12 numbers a year, instead of five numbers, the professional readers of THE REVIEW are assured as much technical matter as they have ever received, if not more.

Our Search for Paid Contributions.

The magazine wants all the sound, authoritative articles dealing with the technical aspects of your subject that it can get. It wants to print the very best technical articles dealing with the subject of deafness and the deaf that appear anywhere. The foreign field is covered very ably by Director Hansen; we not only want to cover the field in this country; in very large measure we want to *constitute* that field. If you, personally, have any technical articles, send them in and we shall be glad to pay you for them.

A New Department—"Suggestions for Teachers."

In addition to our regular departments (some of which still have to be developed) THE REVIEW starts this month a new department, called "Suggestions to Teachers." The technical matter contained in this department will differ from that appearing elsewhere in that the "Suggestions to Teachers" are designed to consist exclusively of practical pedagogics, with especial reference to the education of the deaf, while other technical articles will appeal to the educated deaf themselves, their parents, relatives, and friends; to psychologists, social workers, publicists, and aurists, as well as to teachers.

If you, as a practical teacher, have encountered some problem of instruction on which you need guidance, write THE REVIEW, asking for it, and we shall do our best to have it treated by an authority in the "Suggestions to Teachers" department.

If you have solved any problem of teaching, have discovered some little knack that will enable your over-driven fellow-workers to lead their charges to the comprehension of a knotty point by the easiest route, write it for THE REVIEW.

All contributions to this department, like all our technical articles, will be paid for, not as a mere matter of the *quid pro quo*, but simply as an evidence that your contribution to teaching knowledge is appreciated in a substantial way. If you do not think well enough of the department to write for it, it will be discontinued, because it is designed solely for teachers, and so can be written only by teachers.

The Review as a Popular Magazine.

One correspondent describes the revised editorial policy thus: "Notes and articles pertaining to our work—then articles upon subjects about which people are thinking and talking—and in such concise form that even the busiest of us could read them." That is a *nugget* sentence! It tells precisely what the revised editorial policy is aiming to do, whether or not you agree with this particular member that we have yet succeeded in doing it.

The matter of public interest on these pages is designed to add to every one's store of general information—and general information is a vital part of any educator's teaching equipment.

The subjects are picked out with reference to their value as information, and to their universal appeal, not alone to parents and teachers, but to the children as well—alike to the youngsters and the grown-ups. Sometimes I write one of these articles myself, and, when this is the case, I learn more than the smallest child that reads them, for I go to the best authorities to get them, and they tell me more than we could possibly print. Most of my authorities are alive; they live right here in Washington, and by looking them up I am able to obtain the very latest information on the subject under discussion. Sometimes the information is so new that it has never before been published in any form. This information is compressed into small compass and, whenever possible, is so written as to be comprehensible to a child's intelligence, if the little one elects to read it for himself, rather than to have any one "tell him about it."

Other New Features.

Aside from the department "Suggestions to Teachers," there are two other new features in this month's magazine, namely, reproductions of photographs by Underwood & Underwood, and an article, the first of a series, by David Fairchild. Underwood & Underwood are, of course, known in every reading home. They are the largest world-photographers of America, and from their enormous collection of more than 150,000 photographs THE REVIEW is enabled, through a special contract recently signed, to select any picture for reproduction.

The editorial note accompanying Mr. Fairchild's article explains the value of his contributions to your magazine. Mr. Fairchild is one of the most widely traveled men of Washington, that city of travel, culture, and cosmopolitanism, and, as a result of his travels, he possesses a great number of entertaining and hitherto unpublished photographs, together with copious descriptive material, from which THE REVIEW is privileged to take anything.

Dr. Bell's Note-Book.

Now I am come to the most important bit of magazine news of which I can write you this month. It concerns the "Note-Book of Alexander Graham Bell."

Owing to our environment, most of us seldom or never think of Dr. Bell in any other connection than that with the work of educating the deaf and investigating the conditions of deafness. We are very likely to forget that this is only one side of his many-sided activities; that the general public does not know of him in this relation at all, but that to them Dr. Bell is the inventor of the telephone, a pioneer of the aerodrome, and one of the most prominent scientists of this country, or, indeed, of the world. It is in this public character of scientist, rather than in the, to us, familiar aspect of educator, that Dr. Bell will appear in the pages of your magazine next month.

Dr. Bell has been persuaded to allow quotations from the memoranda and ideas which have accumulated in his portfolio as the result of a lifetime of active scientific investigation and study. These invaluable contributions to the *stimulation* of knowledge will begin in next month's REVIEW. I cannot tell you how long the series will be; I hope it will last for years, and so, doubtless, will you, when you read the first installment next month.

The importance of this announcement to our generation can hardly be overestimated. Seldom or never does a leader of thought or invention allow his contemporaries to learn of the means by which he accomplishes his work. Usually the secrets of the laboratory and the study-chamber die with their master, and, in those rare instances when the public is allowed a glimpse at the processes of discovery, it is generally long after the master himself is dead.

But glimpses at Dr. Bell's scientific method are here freely given to the world, while he is still at the summit of his reputation; still in the prime of vigor, physical and mental; still in the possession of all the faculties, of all the tireless energy, and, more than all, the practical skill which first conceived and then made possible such inventions as the telephone, the photophone, and the tetrahedral kite.

It is a piece of rare unselfishness for any man to divulge to an emulous world the ideas which he might himself develop and by which he might still further extend an already international reputation. Those who work for personal renown, rather than for the advancement of science, do not make public the contents of their portfolios; instead, they "bequeath them to posterity" in some unintelligible form, or, in some instances, even burn them.

The "Note-Book of Alexander Graham Bell" is the note-book of an educator, a scientist, a thinker. It is also the note-book of a young man who saw visions, of an older man who dreamed dreams, and all of these reveries, no matter how undeveloped, are entitled to consideration as emanating from a man who has made his dreams come true.

These "Notes" are crowded with ideas, every one of which is eminently worth considering, and some of which may possess possibilities of development as yet undreamt of.

"Triological's" Annual Meeting.

The June REVIEW will also contain a full account of such proceedings of the American Laryngological, Rhinological, and Otological Society's annual meeting as may be of interest to you. There will also be an article on "Fishes that Fish"—strange sea monsters that lure other fish with an apparatus that corresponds to the human angler's hook and line. This article will be embellished with a full-page frontispiece drawing, made by a brilliant young artist from whom we hope to have further contributions. In addition to the frontispiece, this article will be illustrated with from 8 to 10 pages of half-tone engravings.

The July number will be even better than the June number. I shall tell you about that in my next letter.

Our Catalogues and Booklet.

It had been hoped long before this to have our booklet, "The Story of the Volta Bureau," ready for distribution. Unexpected delays have, however, occurred, and its publication may have to be put off for some weeks. The catalogues of our books, some titles from which are given on the back page, will shortly be out. There are two of them, one a schedule of transactions of the American Association to Promote the Teaching of Speech to the Deaf, and the other the joint list of all other publications issued by the Association and the Volta Bureau for the Increase and Diffusion of Knowledge Relating to the Deaf. We ask yet a little patience from our fellow-members who have written in for the booklet and the catalogues.

The outline of the work, aims, and activities of the Association and the Bureau, which appeared last month on page three, will this month be found on page 75. If any prospective member wants to know about your organizations, show him that.

Faithfully yours,
A. G. Bell.

THE American Association to Promote the Teaching of Speech to the Deaf, a scientific and scholarly body, was incorporated under the laws of the State of New York in 1890 "for the purpose of promoting instruction in speech to all deaf children throughout America."

In December, 1908, the Association took over and is now continuing the work of **The Volta Bureau for the Increase and Diffusion of Knowledge Relating to the Deaf.**

The two institutions labor to keep alive in the deaf the most precious acquisition of the human race, the faculty of speech, to the end that no child in America shall grow up dumb because of deafness; to obtain equal opportunities, educational or otherwise, for the deaf; correctly to inform the public regarding this great class of our population, who number some 89,000 according to the last census; and to conduct research work into the general subject of deafness and the problems arising therefrom.

The **membership** of the Association includes representatives of every system of teaching speech to the deaf that is now extant, as well as aurists, psychologists, scholars, scientists, philanthropists, the deaf themselves, and all investigators into or thinkers upon the general subject of deafness and its phenomena.

The Association accomplishes its work, namely, the promotion of the teaching of speech to the deaf and the diffusion of cognate knowledge:

1. By **publications,** including monographs and ***The Volta Review,*** an illustrated monthly magazine of general and technical interest, all the receipts from which are devoted to the purposes of the magazine itself or to furthering the work of the Association.

2. By the maintenance of **the largest technical library** of its character in the world. The library is located at the Association's home, in the Volta Building, Washington, D. C., and is open to the free use of all members.

3. By **conventions,** at which all the leading specialists in problems relating to the deaf meet for an interchange of views and for the delivery of addresses, which are later published.

4. By the preparation of **exhibits** for the purpose of enlightening the public as to the character, the importance, and the progress of the work done by the Association.

5. By contributing toward the maintenance of **a normal class** of instruction at the Clarke School, Northampton, Mass., a sum which last year was in excess of the total revenue derived from membership dues in the Association.

6. By providing **a clearing house** of information through its executive offices in the Volta Building, at Volta Place and Thirty-fifth street, Washington, D. C. This correspondence department is under the supervision of Frank W. Booth, the general secretary of the Association.

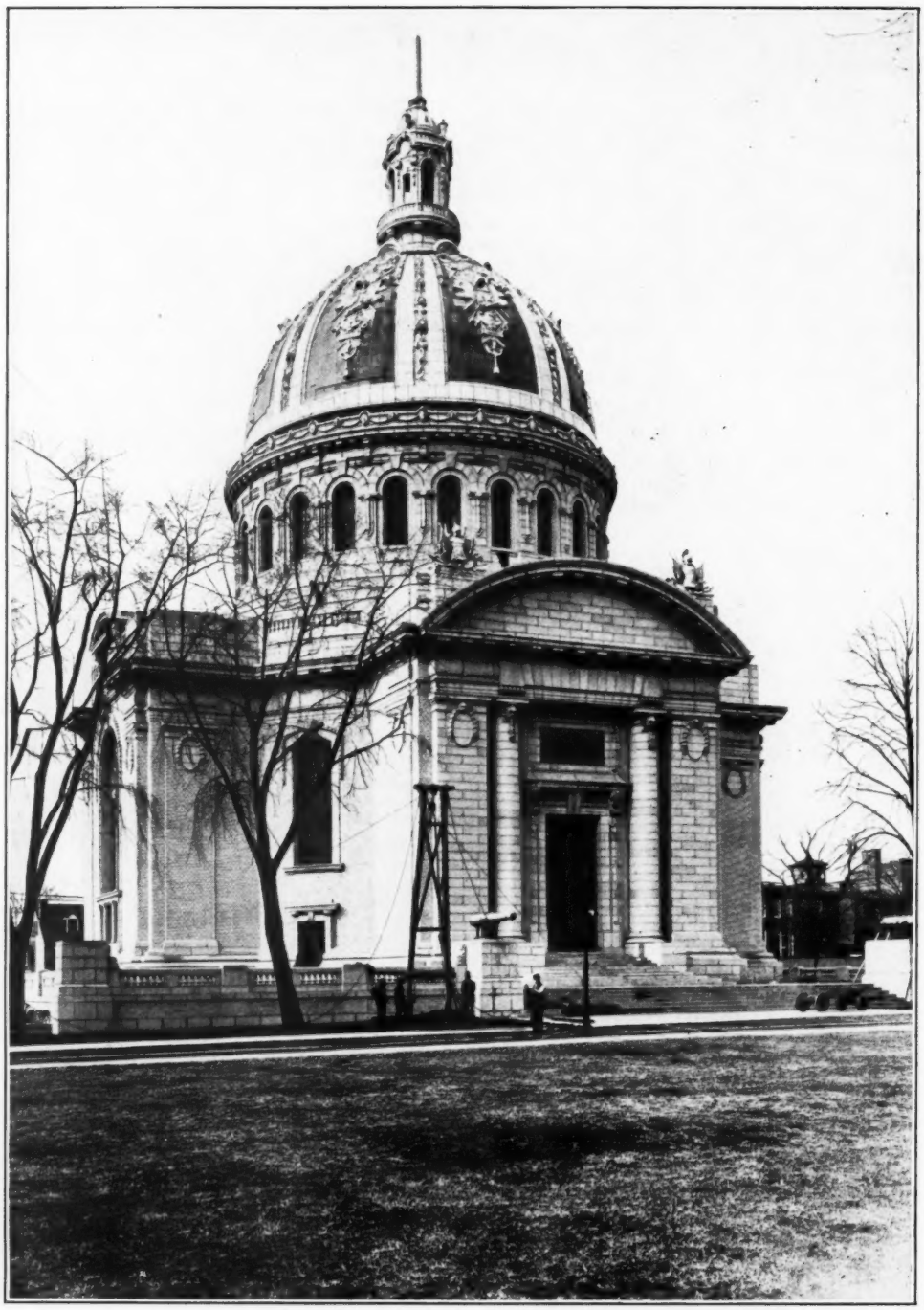
7. By maintaining **a Teacher's Information Agency,** which is free to members. Last year the Information Agency received about 70 applications from teachers, and the number of inquiries for teachers was in excess of this supply.

8. By the preparation and circulation of **exhaustive statistics and information** relating to the deaf.

9. By such additional **research work** as the Association's resources will permit.

The **annual dues are $2** and the fee for a life membership is $50. There is **no entrance fee.**

All members of the Association are entitled to its magazine, ***The Volta Review,*** free of charge for the period of membership; to a reduced rate on its publications; to the free use of its library, and to all information collateral to the purposes of the Association which may be in the possession of its officers.



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"ON EARTH, PEACE."

CAPTURED SPANISH CANNON BEING MOUNTED AT THE CHAPEL OF THE ANNAPOLIS NAVAL ACADEMY.

"This people draweth nigh unto Me with their mouth, and honoureth Me with their lips; but their heart is far from Me." (See page 113.)

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Formerly THE ASSOCIATION REVIEW

An Illustrated Monthly of Facts

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CONVERSING WITH THE BLIND-DEAF

BY PROF. A. CZILY, BUDAPEST UNIVERSITY, HUNGARY

So long as the blind-deaf can "hear" only by means of hand pressure, is it possible for one so doubly handicapped to carry on a conversation with more than one person, or, at the most, two persons at a time? Professor Czily *says that it is possible, and herewith outlines a remarkable system of "touch-talk" the perfection of which, he anticipates, will allow a roomful of blind-deaf to converse, each with the other, with as little restraint as persons in the possession of all their five senses. In addition, the Hungarian authority reviews all the principal systems of touch-talk which have ever been devised for the blind-deaf from the time of* Clara Bridgman, *and introduces the general American public to the German prodigy,* Lorm, *who invented a simplified finger alphabet for his own use and by its aid not only acquired a vast store of technical knowledge, but attained prominence as a poet and philosopher.* Lorm's *story is as interesting as* Helen Keller's, *and his achievements are as remarkable, although for some reason they have never attained the same publicity, at least on this side of the Atlantic.*

ONE of the most awful instances of the cruelty of unfeeling fate is the connection of blindness and deafness in the same individual. A human being bereft of sight and hearing from birth or early childhood, and consequently dumb, has to undergo more in the midst of social life than in the loneliness of the deepest dungeon. With its utterly deficient psychic relation to the outer world, exposed as it is to innumerable and unaccountable external influences, its poor mind is in a state of constant alarm, and notwithstanding remains shrouded in darkness. Thus in comparison with it every normally developed animal appears to be a harmonious creature of a higher order.

As is well known, the marvel wrought by Samuel Gridley Howe upon Laura Bridgman, in the former half of the last century, pointed out the way of admission into the community of life for all these outlaws of intellectual intercourse. This was done by creating speech through the sense of touch. That which Dickens, in his American Notes of 1842, related about Laura Bridgman, whom he personally saw, might have appeared to some readers to be a description in which the fancy of that celebrated novelist acted a leading part.

But now the unprecedented literary success of the autobiography of Helen Keller, our young blind and deaf contemporary, forcibly directed the general attention toward those facts, bordering upon the incredible, which yield the philanthropist the deep emotion of pathetic contentment and offer to the psy-

chologist a new field of investigation, but, above all, forever remain one of the most brilliant achievements of the educational art.

Leaving out of the question the exceptional gifts of Helen Keller, we find similar instances of successful education of the blind and deaf in increasing number everywhere. Still the quota of the unfortunate who are deprived of the sense of sight and hearing is larger than is commonly known. They can find no proper asylum, either in the institutions for the blind or in those for the deaf, since in the former success of teaching depends in a high degree upon hearing, in the latter almost entirely upon sight. Therefore, in many places the establishment of special schools for the blind and deaf is being earnestly considered. No doubt such intentions will sooner or later be fulfilled.

248 Blind-Deaf in Germany.

During the preliminary consultations held by a commission for the collecting of international statistics regarding the blind, one of the members for Germany brought forward a motion in favor of ascertaining the exact number of the *blind and deaf*. On the basis of his own inquiries, he fixed the number for Germany at 248. Supposing, then, that only a part of these poorest of the poor be really fit for education, still the organization, not of one great establishment, but of many small ones for only a few pupils each, would be necessary. One must bear in mind that intellectual intercourse with the blind and deaf depends exclusively upon the sense of touch; therefore each individual requires separate teaching, in the performing of which the temporary personal activity of one teacher is entirely engaged. For this reason I think the question *as to whether there is no possibility of some kind of common teaching* is worth consideration, at least as regards certain parts of the educational proceedings. I take the opportunity to set out my own thoughts as to this, and to draw attention to a hitherto unknown experiment to that end.

The Methods of Howe and Prince Obolensky.

The generally adopted method of mental communication with the blind and deaf is that which Howe used in teaching Laura Bridgman. It is the "manual alphabet," devised by the Abbé de l'Epée for speech with the deaf and dumb. You may look for it in any encyclopædic dictionary. It is composed of a series of signs representing the different letters, formed by the hand and fingers. Originally destined to be received through the sense of sight, these signs are here impressed upon the palm and recognized by the sense of touch.

In addition, other no less successful methods are known; that, for instance, employed by the Prince Obolensky, in Russia, which consists in leading about of the forefinger on a plate fitted with raised letters in Latin and Braille. It has this advantage, that it gives every person who can read the capacity of communicating with the blind and deaf without previous learning. But the handling of the plate is evidently very cumbersome in the process of reading to the blind and deaf, because in such case two occupations which engage the eye of the reader in two different directions are combined simultaneously.

The impressing of common letters upon the palm seems to serve the purpose better. I know of a blind and deaf gentleman of advanced age who not long ago in this way learned by heart a story in verse running to more than a thousand lines. He declares that simple system to be the best. A procedure partly analogous, employed in some cases, consists in writing with the seized forefinger of the blind and deaf person, who, from the movement induced, recognizes the respective letters.

I further heard of two methods seldom practiced, and only remarkable for uncommon unwieldliness; they move our pity rather than arouse our interest. The

HELEN KELLER.

Whose attainments have focussed the attention of this generation upon the problem of the blind-deaf. This is probably the best-known picture of Miss Keller.

one is based on giving to different parts of the body the signification of the several letters of the alphabet: speech is communicated to the blind and deaf person by touching the parts of the body in the required order. A conversation of that kind might afford a very curious and somehow alarming aspect. The other method of satisfying the want of mental intercourse is still more wearisome. The blind and deaf person repeats the alphabet from the beginning for each single letter of the intended word anew, to be stopped when the special letter is reached.

Recently the publication of a hitherto unknown "finger alphabet" has been effected. It has a little story of its own

FIG. 1.—DIAGRAM OF LORM'S "TOUCH-ALPHABET."

which is worth remembering as another elevating instance of a victorious struggle for the self-preservation of the human mind.

The Prodigy Lorm.

Hieronimus Lorm was a poet and philosopher of some rank in modern German literature. Like some legend, it was known of him, even in his lifetime, that he was blind and deaf, and depended for the satisfaction of all his uncommonly great mental demands upon communication by means of a kind of finger speech which he himself had devised. He personally never gave an account of his affliction. The particulars came out some time after his death, when in the same town where he lived a fellow-sufferer succeeded in learning the finger alphabet. That gentleman, the Austrian Governmental Councillor Herr v. Chlumecky, now retired after becoming blind and deaf, in his great happiness of finding himself rescued from mental isolation, prompted his kind teacher, the

daughter of the late poet, to bring before the public the story and description of this method of speech.

Lorm became totally deaf in his sixteenth year, and not long afterwards he lost his sight forever. He felt it to be his destiny either to lose a whole world or to fight for it. But how? Laura Bridgman's salvation evidently was unknown to him. He had to provide for himself without a model—a circumstance which makes it an interesting and even momentous inquiry how he became equal to his task. Since the time he could no more hear the sound of human speech he had depended upon the observation of the movement of writing in the air and on the table. With his sight gone, too, only the sense of touch was left him for guidance, and he could not do otherwise than exchange the signs seen by the eye for such felt by the sense of touch. To that end he devised a series of different relations between his hand and fingers and the appropriate fingering of those who spoke to him.

Lorm's System of Touch-Talk.

The German alphabet can be reduced to 22 signs; these he put into two groups: one contained the letters indicated by the touch of different parts of the finger; the other those which in different ways were impressed into the palm of the hand. The diagram (Fig. 1) gives the direction for the explanation which follows.

To the first group belong, first of all, the five vowels, each of which is indicated by the touch of the finger-ends corresponding. The four fingers (from the forefinger to the little finger), when touched at the same time on the first and second joint, are further the intermediaries for the four consonants *b, d, g, h.* The pressing together of the fore and middle fingers forms the letter *f;* the superposition of the same two fingers the letter *p;* to seize the thumb tightly between two fingers signifies the letter *t;* the synchronous tip of two finger-ends upon the outer part of the thumb indicates *v,* of three fingers *w.*

For the palm of the hand, forming the second group, remain the following letters: *k* fashioned by the pressing of the five finger-ends into the palm; *l* by sweeping of the same across the palm; *m* by tipping three points into the palm; *n* by tipping two points; *r* is formed by a trill with the fore and middle fingers; *s* by a circle described upon the middle of the palm; *z* by a dash; *ch* by a cross. The remaining letters are not formed by themselves, but substituted; *c* by *k* or *z* (as it is occasionally pronounced in German); *q* by *ku; x* by *ks.*

The minute description of this finger alphabet is not given here for direct instruction. As some of the letters have no proper signs, but are only phonetically substituted, this kind of finger speech cannot be exactly orthographic, and, with all its fitness for conversation, is not to be used for primary teaching. The main point is to consider that, notwithstanding its intricacy and the apparent difficulty of its application, this speech of touch offers a thorough compensation for common speech. Lorm was able to live in society and to follow his calling. He considered himself fit to marry and to found a home, where he enjoyed the happiest companionship of his wife and children. And, moreover, he acquired a stupendous scientific knowledge.

Lately I became personally acquainted with Herr von Chlumecy, and can now judge from my own experience how easy it is to converse with him by means of this finger speech. This April, in Vienna, he attended a meeting of a committee for promoting the interests of the blind as one of its most conspicuous leading members. With the aid of his skillful lady interpreter, who writes the spoken word immediately and with astonishing celerity upon his hand, he took part in all the deliberations, and proved to be a very quick and acute debater. According to his own statement, during the last five years of his total blindness and deafness he, by the same way of communication, had absorbed a larger quantity of literature than in the long course of his former busy official life.

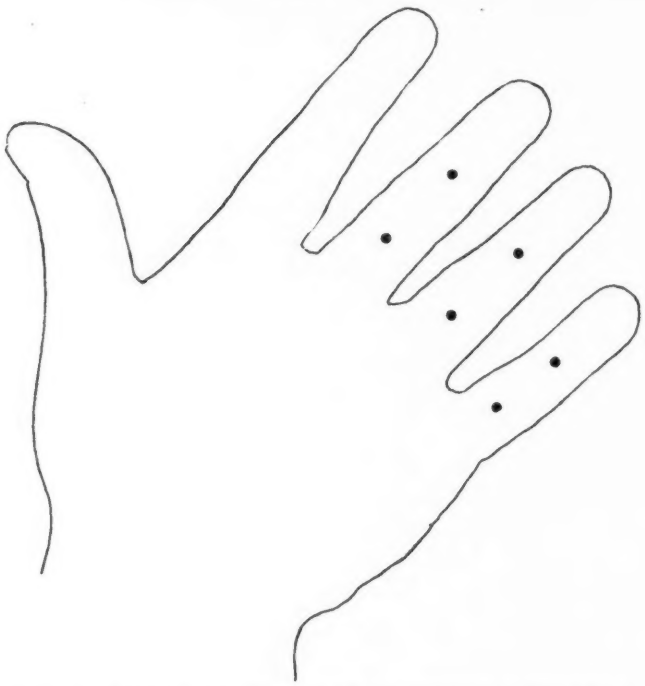

FIG. 2.—DIAGRAM OF THE BRAILLE "TOUCH-ALPHABET."

Not long ago a similar but more elaborate speech of touch was proposed by Herr Piepetz, teacher for the deaf and dumb in Graz (Styria). It consists of an entire alphabet with different signs for each letter, wherewith orthographically correct speech is secured, and a number of contractions, which makes rapid conversation possible.

I consider it to be in the highest degree remarkable that so many different ways of imparting impressions to the sense of touch should be equally and wonderfully adapted for intellectual intercourse with the blind and deaf. It is not my intention, however, merely to augment the number of the methods hitherto known by here adding the description of a new one. The real end I have in view is already mentioned, and will be later still more apparent. It is a method which, not standing behind the others with regard to quickness of mediation, surpasses all with regard to simplicity. It is long since the trial has been made of it, and the result is well established. That shall be spoken of first; afterwards I will explain the bearing of my observation as it unveiled itself to my mind.

At my instance, in 1904, a girl of 8 years of age who, a short time before, in consequence of meningitis, had become blind and deaf, had been given in charge of Mr. Adler, a teacher for the blind and the deaf and dumb in Budapest, to be educated. The mental development of that gifted child ranks among the hitherto known best results of education imparted under such peculiar circumstances; it is deserving of special description, which will be later communicated. *Contrary to my expectation, Mr. Adler did not choose the manual alphabet for the deaf and dumb for the ultimate colloquial intercourse with the child, but the point-letters of Braille, for the application of which he devised a method quite as rational as, from the beginning, surprisingly successful.*

The Braille Speech.

It is well known that the whole system of these letters is shaped through the different grouping of raised points, from

1 to 6, within the invariable borders of three points vertically and two points horizontally placed:

. .
. .
. .

Out of these every letter of all known languages, every kind of punctuation, a great number of contractions, and several special keys can be formed.

For applying as an instrument of speech with the blind and deaf child, signs of touch, which imitate the arrangement of the points of the Braille letters, Mr. Adler adduces the following reasons: The fact that in our country the manual alphabet of the Abbé de l'Epée for the deaf and dumb is almost totally supplanted by the labial speech and phonetic method; and again, the intention, to guarantee for the child a possibly large circle of social intercourse by transforming the same point-letters, which are so familiar to every schooled blind person, into a medium of speech for the sense of touch. It is carried out in the following way:

The six points of the Braille system being distributed in three pairs, one below the other, the corresponding three lines are represented by three adjoining fingers of the left hand; in our case the middle, ring, and little fingers (see diagram, fig. 2). By touching the first joint on the inner surface, the left points of the Braille letters are indicated; by touching the second joints, the right points. This relationship to the written Braille letters proves correct as long as the left hand is used. If, in any other case, the right hand were to be preferred, the second joint would, in the reversed order, indicate the left, and the first joint the right points. The absolutely isolated feeling of the respective spots of the skin secures the unerring localization of the impressions. The correctly marked letter is recognized at once.

The doubts I at first had as to the practicability of this method, my apprehension especially that, by imparting each point separately, the conversation could not be but slow and cumbersome, soon turned out to be groundless. Both by rapid sweeping over two or three finger joints at one stroke and by simultaneous tipping with two or more suitably held finger-ends, the practiced person makes himself so quickly understood by the child that I have been the wondering witness of many a very lively and animated conversation with her.

The little Margaret Tgri, which is the name of the blind and deaf girl, communicates by direct speech with numerous persons, since but few of those who had the opportunity often to come near the lovable child withstand temptation to learn her alphabet and talk to her. She is so much accustomed to fluent speech that it is funny to watch her patronizing "grandezza," mingled with impatience, when addressed by any one less exercised. Moreover, her whole education, save for her reading, depends exclusively upon her being taught by the aid of the same speech of touch. Notwithstanding, the knowledge of that blind and deaf girl in certain branches of study would perhaps shame many a child of the same age who, possessed of sight, is taught with proper success in a public school.

Therefore it must be acknowledged that, at least in this case, the appropriation of signs of touch, in the disposition of the points of the Braille letters, for speech with the blind and deaf, proved to be excellent. As I have had experience neither about the application of the manual alphabet of the Abbé de l'Epée nor with Lorm's finger alphabet as a means of mental intercourse under similar circumstances, I never think of comparing the respective values of these two methods, nor of comparing the practicability of either with the new "Braille speech," as I may call it. But there is one thing worth considering, and that is the important fact that none but the last one is *transferable to a machine*. I soon felt induced to make the experiment.

I had a lever construction made (see the accompanying diagram, fig. 3), with

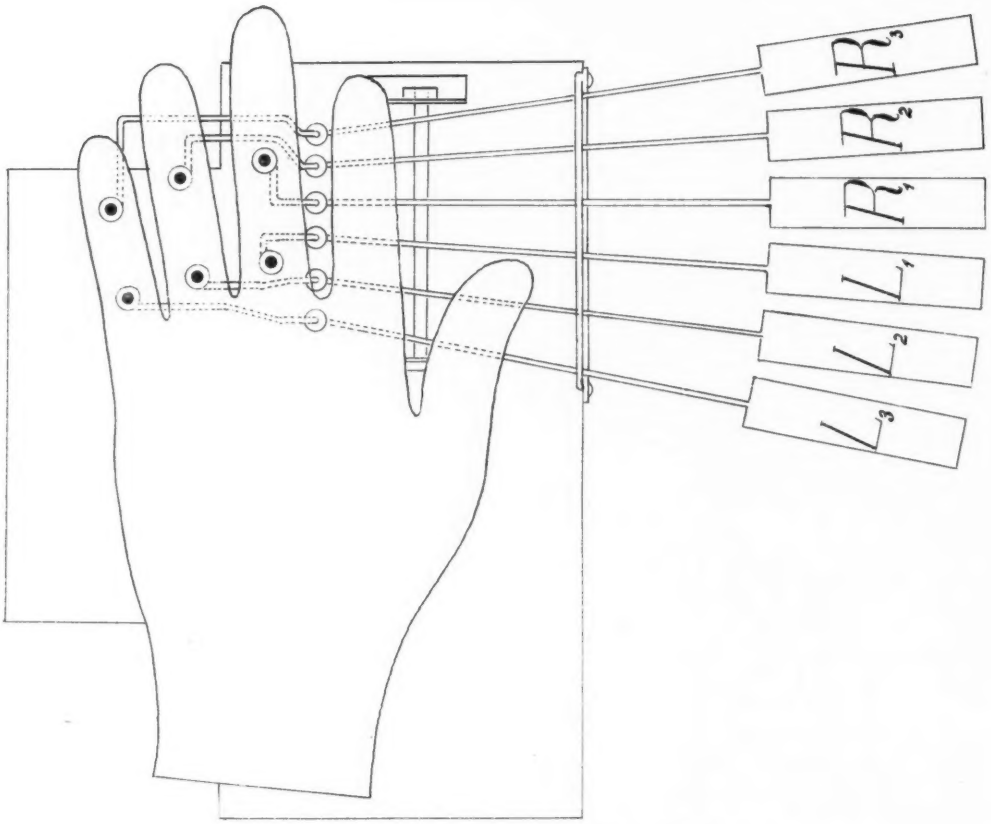

FIG. 3.—THE CZILY "TOUCH-TALK" MACHINE.

On the right are the keys pressed by the operator; on the left is the imaginary hand of a blind-deaf person receiving the impressions.

six keys having the same distribution as that on the German Braille writing machine of Picht. Each of these keys is connected with one separate peg in such a way that through pressing down the former the latter is lifted to a certain height. These corresponding six pegs are grouped in conformity with the arrangement of the six points of the Braille system, yet not in such close vicinity as on the above-mentioned machine for writing Braille letters; but, according to the purpose here in view, suited to the measures of the first and second joints of the last three fingers of the left hand.

As it was my intention to experiment previously on myself and on other grown-up people, I took those measures from the full-grown hand. To serve the purpose more conveniently, a hollow cast of the left palm and fingers had been fixed to the top of the machine in such a position that each one of the last three fingers of the hand resting on it could be touched only by two of the pegs passing through proper holes in the mold when tipped up.

The two central keys, L_1 and R_1, lift the two pegs for the middle finger, marking the upper pair of the Braille points. The adjoining two, L_2 and R_2, those of the ring finger, mark the middle pair of the points. The two outward keys, L_3 and R_3, lift the two pegs for the little finger, and of course mark the lowest pair of points. In consequence of this arrangement, when using the machine for speech one has to proceed in

the same way as in writing with the Picht machine.[1]

To secure the correctness of the imparted impression of touch, the fingers of the mold are kept as distant from one another as possible without straining the imposed hand; also the two pegs for each finger are sufficiently distant that the synchronous tips of both are always felt as distinctly separate impressions. I ought not to forget to notice that the first model of the machine is adapted to the last three fingers in strict imitation of the original experiment with the blind and deaf girl. Unquestionably in the same way, and with equal success (considering the proportions of the finger joints, perhaps even with better), the fore, middle, and ring finger could be employed.

The results of my experiments were such that I can report about them at once in the briefest way. They proved, even in the face of my highly favorable expectations, surprisingly successful. Most of the persons put to the test were unacquainted with Braille writing, and received instructions only to qualify the impressions on the middle finger, as "*1: near-far*"; on the ring finger, as "*2: near-far*"; on the little finger, as "*3: near-far.*" Hereby "near" (to the palm) meant the left, "far" (from the palm) meant the right Braille point.

[1] In case the previously qualified relation between the three fingers and the Braille-points, with inverted palm, should appear to be inverted too, one has to bear in mind that, corresponding to this, the two outward keys, *R–3* and *L–3*, on the machine stand for the upper two points, and the two central keys, *R–1* and *L–1*, for the lowest points of the Braille-letters.

Considering now that all those undergoing the experiment nearly unprepared, in spite of being bound to a somewhat strange method of indicating the received impressions, without exception, and as it were without hesitation, made correct statements, one cannot doubt but that the intelligent blind and deaf pupil, with his naturally enhanced concentration and minuteness of attention to impressions of touch, would soon be able to decipher with suitable quickness the point writing applied to his fingers in the manner described.

If all I report on the subject is founded upon fact, as everybody will easily find it to be, the thought of practical application now arises.

I imagine a number of sufficiently taught blind and deaf persons, each of whom holds his hand on a fitting separate hand form. Under each hand form there is a system of six properly arranged and practicable pegs connected with a central lever apparatus by electric wires. One person handling the latter sets the pegs of each system in coinciding motion simultaneously, and, being a teacher or a lecturer exercised in Braille writing, this one individual will be able to supply a multitude of blind and deaf "listeners" with mental nourishment.

My hope to see this idea realized is not strictly founded upon the application of the Braille letters for speech by a machine. Perhaps better and easier methods may still be found; happy he who will prove it. I am quite satisfied if, by having given an account of my own experiments, I merely succeed in showing a desirable goal to be within reach.

ON THE LIVING SANDS OF CERAN

BY DAVID FAIRCHILD, M. Sc.,

In Charge of Foreign Plant and Seed Introduction, Department of Agriculture

IN 1899 David Fairchild, then an agricultural explorer in the service of our government, visited Ceran, a practically uninhabited island of the Dutch East Indies—an island where the sea beach is alive and crawls, where the trees have roots that grow in the air, and the fish come out of the sea to climb the trees of the neighboring jungle.

This picture illustrates almost the first object which met Mr. Fairchild's eyes upon landing—a species of fig tree whose roots start out of its trunk at a distance of 8 to 10 feet above the ground, and then grow downward to meet the marshy soil in the form of a natural flying buttress. These trees, Mr. Fairchild says, are some 50 or 60 feet in height. Their leaves look like the leaves of a rubber plant, and their juice is milky white like that of the milk weed.

"This tree," Mr. Fairchild writes, "grows so near the seashore that a species of climbing fish crawls up these roots, sometimes to a distance of 30 or 40 feet. When we landed on this island there were hundreds of these fish jumping around on the sand and climbing the roots of such trees as this, hunting for insects.

"As we set foot on this coast of wonders I turned in amazement to my companion and said, 'Why, Mr. Lathrop, the sea beach is running away!' It is no exaggeration to say that the beach was *alive* with hermit crabs. They seemed as numerous as the sands of the sea, and were of about the same color. Their shells ranged in size from a pin's head to that of a horse chestnut, and they were in constant motion, thousands upon thousands of them, crawling up and down the blades of grass and swarming over the trunks of the trees in the beach jungle.

"These moving sands, with a background of trees whose roots were apparently all above ground, and which were covered by tree-climbing fish, formed the most fantastic picture that it has ever been my fortune to look upon."

In the course of his explorations Mr. Fairchild has penetrated more inaccessible quarters of the earth probably than most "globe trotters." All his traveling was done in the company of a camera, and out of his enormous collection of photographs THE VOLTA REVIEW has received a number of the very choicest and rarest for reproduction. These photographs will appear in forthcoming numbers.

A FLYING BUTTRESS IN THE JUNGLE.

This is a natural growth of tree-roots, common to all this species of tropical fig tree. Good photographs taken in the jungle are rare, owing to the fact that the miasmatic atmosphere generally ruins the photographer's films before they can be protected.

THE NOMADS OF THE SKY*

COMETS, METEORS, AND METEORITES—WHAT THEY ARE—THEIR SIZE, THEIR COMPOSITION, AND THEIR TRAVELS—HALLEY'S COMET—"JUPITER'S COMET FAMILY"—"SKY-MURDER"—METEORITE DIAMONDS—THE COON BUTTE DISASTER—A THEORY REGARDING THE BEGINNINGS OF LIFE

BY F. K. NOYES

TOWARD the middle of this month the billion and a half of little human creatures that swarm upon this earth's surface will turn their eyes toward the western sky, to follow the fiery wonder of Halley's comet, with its flowing tail, which, as astronomers expect, may stretch about one-third across the firmament. This comet was sighted through a telescope as long ago as last September, and observatories all over the world have followed its progress ever since. On April 19 it was nearest the sun and heading for the earth, and five days later its motion was toward the east.

It is accordingly possible to calculate that the best view of the comet may be obtained by those who watch for it from one to two hours before sunrise on any morning from the 6th of May to the 17th. It will also be in plain sight one or two hours after sunset for a few days after May 20, although the comet will then be fainter in outline, as it will be retreating from the earth. The comet will dart between the earth and the sun, some 14,000,000 miles from us, so that there is not the least danger of its striking the earth. We may, however, pass through its long tail, and in this case it is possible that there will be a sort of Roman candle exhibition of shooting stars, which astronomers call a "meteoric shower."

Astronomers will, however, be most interested in that point of the comet's progress when it will be exactly in line between the earth and the sun. The comet will take this position on May 18, and on that day we shall be exposed to the gases contained in the comet's tail for no less than three hours and a half. It has never before happened, so far as astronomers know, that this earth has ever had to endure the gases from a comet for more than a minute or two, and the effects of this long exposure to the influence of Halley's comet will be awaited with much interest.

The Comet's Message to Us.

Formerly every appearance of a comet was the signal for widespread terror among mankind, for it was thought to portend some dreadful thing, as a war, a pestilence, or a famine. But nowadays, in our civilization at least, people realize that the universe was not made to serve man. Instead, they believe that man was made to serve the purposes of the universe.

And so, while the ignorant selfishly take the appearance of a comet to mean that God is indicating his displeasure at the way they are conducting their own little affairs, other people know that the comet is simply a wandering brother of the earth who stares in at us through a rift of our skyey canopy, shakes his long hair, and disappears again into the darkness. Accordingly educated people are no longer afraid of comets. They no longer ask, "What does a comet prophesy?" Instead, they want to know what a comet *is*.

How the Comet Was Named.

The name by which these nomads of the sky are known, like many other sci-

*The manuscript of this article has been carefully read by a distinguished astronomer, and the essential accuracy of the facts can be vouched for.

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EDMUND HALLEY.

entific names, tells us nothing. It comes from a Greek word meaning long-haired, and was given to these celestial visitors to describe the trail of light which streams out from them.

Later on this light-streamer, which was formerly thought of as a head of hair, came to be known as the tail of the comet.

No matter how a comet is situated with regard to the sun, its tail always stretches out on the side farthest away from that body. The reason for this is not known exactly, but it is believed that some particles in the comet are so small that the sun is able to push them away from itself by means of the rays of light which it sends out.

The Physiology of a Comet.

If it were not for an instrument called the spectroscope we would never know what comets are made of. With the spectroscope, however, it is possible to judge what a substance is by the light that it sheds; and thus scientists have found that comets are composed of various gases derived from water and carbon; of sodium, the same substance from which we make cooking soda, and of some iron. Other substances are indicated in the spectroscope, but what these are has not yet been discovered.

The head of a comet is its smallest, but most important, part. Within it there is always a bright, star-like point, called the nucleus, which is supposed to contain all the solid matter in the comet. This little point is seldom bigger than our tiny earth. The rest of a comet is little more than gas and dust.

The nucleus varies from a few hundred to several thousand miles in thickness, while the heads range from 25,000 to 100,000 miles. The biggest comet-head ever measured was that of 1811, which was 1,250,000 miles in diameter. The tail of a comet is sometimes 100,000,000 miles long—longer than the distance from the earth to the sun. These tails, however, are so thin that "the smallest stars have been seen shining through their most brilliant portions with undiminished luster." They are thinner than air—thinner, even, than the best vacuum that science can produce. A hundred miles of comet-tail could be compressed into a bushel basket.

Comets move in parabolas and other curves whose ends do not join, and also in curves whose ends do meet. The paths taken by comets in the sky are called orbits.

The comets whose orbits do not meet at the ends we see once, and never again; the other comets come back to us over and over again on the same route, unless some planet attracts them out of their regular course.

Why People Feared Comets.

You have already read that right-minded people no longer fear comets. This is the story, first of why they feared them, and then of how they learned not to fear them.

For centuries upon centuries it has happened that a pennon of fire has been

unfurled in the sky about once in every 75 years, and always it seemed as if that glaring banner lighted up some scene of ruin, defeat, or misery. It appeared when Julius Cæsar was assassinated, and again when the Roman Empire, which then included all the civilized nations of Europe, crashed to utter ruin in 476. It was the battle-flag that lowered over Hastings field when William the Conqueror robbed Harold the Saxon of his kingdom, England. All Europe shuddered as its livid glare lighted up the entrance of the Mohammedan Turks into Constantinople, the home of the Greek Catholic Church.

What was this pennon of fire? Astronomers called it "a comet"; but the name only hid their ignorance. They did not know what it was; they could not chart its comings and goings as they could those of the planets and the stars. All people knew about this fiery visitor was that two things always came together: the comet and ruin. So they "put two and two together" and came to the conclusion that the comet was the signal of disaster—a sign sent by God to warn the nations of calamity. Finally the people became so terrified that some actually turned sick, and a few even died, when the comet appeared. Special prayers were appointed to be read in churches and the church bells were tolled at noon.

In the 17th century there lived a famous astronomer, Edmund Halley, who refused to believe that the comet was a supernatural visitor. "Comets," reasoned Halley, "must obey natural laws, like every other of God's creatures, and I shall prove this to the world."

Halley saw the comet in 1682, and before it got out of sight he noted down many learned observations regarding it, such as the time he took his observations, the longitude of the perihelion, the longitude of the ascending node, and the inclination of the comet's orbit to the eclictic.

Then he used these figures according to a method suggested in a book by Sir Isaac Newton, and finally, in 1705, he was able to announce that the comet of 1682 would again appear about 1758. When Halley made this prediction he took a very great risk, for he was one of the world's foremost astronomers, and if he had been wrong he would have lost his reputation with future generations. But in the cause of the science to which

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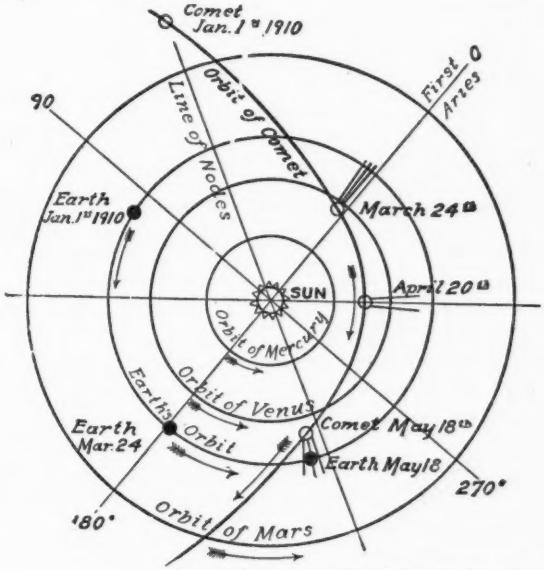
This diagram explains why the earth will have to pass through the tail of Halley's comet. Note that on May 18 the comet is between the earth and the sun, and is directly in line with both bodies. As the tail always appears on the side of the comet which is farthest away from the sun, it naturally follows that on May 18 it will be projected in the direction of the earth, which then happens to be on the "off side." There is no doubt that the tail will be long enough to envelop the earth in its vapors, as the comet itself will be only 14,000,000 miles away from the earth on that day, while the length of its tail exceeded this distance as far back as last February.

To a body traveling at the rate of 30 to 50 miles a second, 14,000,000 miles is only a very short distance. Assurance has, however, been given that there is no danger of the comet's striking the earth. We are in danger from this source only once in 15,000,000 years, it is figured, and then the chances of our being struck are only 1 in 281,000,000.



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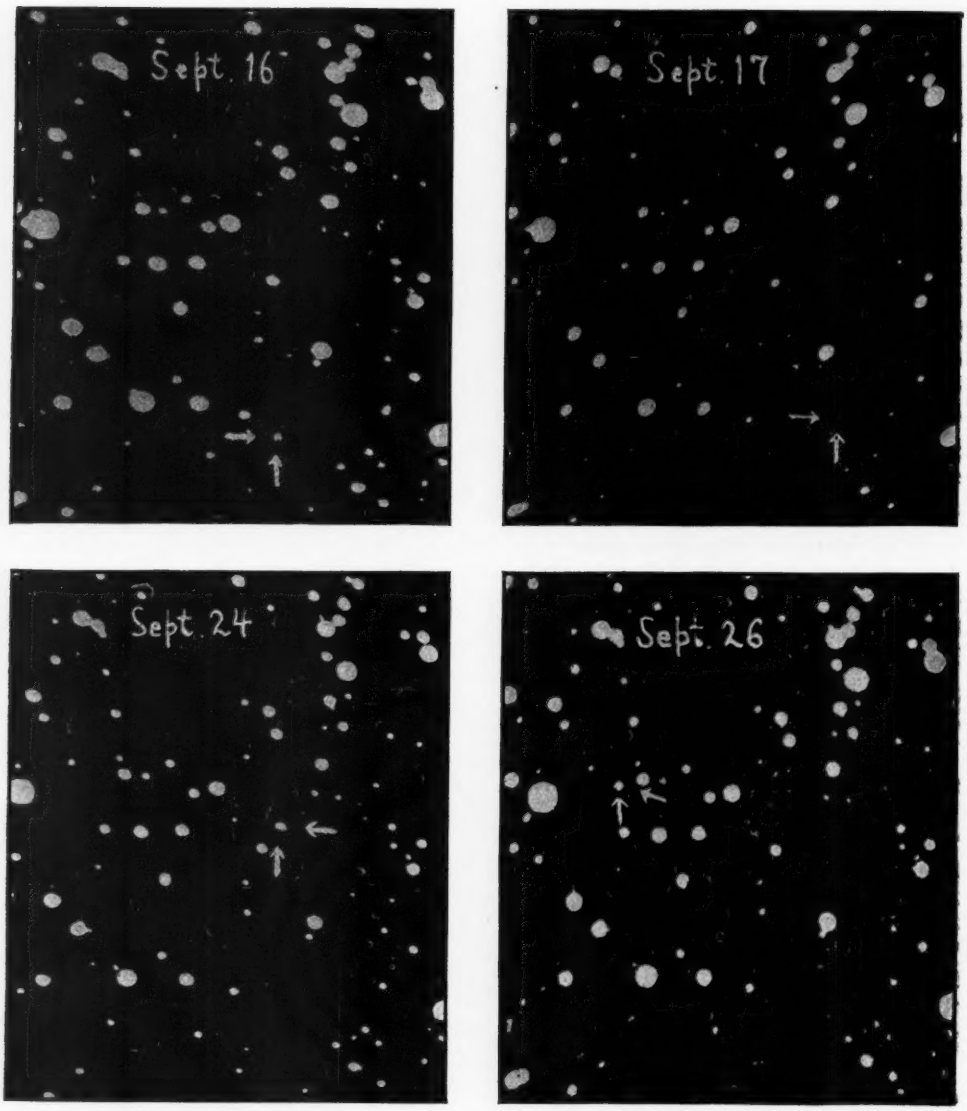
RELATIVE POSITIONS OF THE COMET, THE EARTH, AND THE SUN.



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FIRST PUBLISHED PHOTOGRAPHS OF HALLEY'S COMET.

These photographs were taken by Oliver J. Lee at the Yerkes Observatory, in California, while the comet was still 300,000,000 miles distant from both the sun and the earth. They all represent the same portion of the sky, the arrow in each case pointing to the comet, which appears as a faint star, but moves from night to night. The photographs are magnified about ten times. The brightest star shown is ten times too pale to be seen by human eyes, while the faintest stars are 25,000 times fainter than the extreme limits of our unaided vision. An exposure of 180 minutes was necessary to take the first picture, and one of 130 minutes for that dated September 17.

This photograph, which was taken at the Yerkes Observatory by Professor Barnard, shows the comet as it appeared when 143,000,000 miles from the earth, and 162,000,000 miles from us. The tail is beginning to make its appearance, and thereafter it grew so rapidly that only three weeks later it was estimated to be 14,000,000 miles long. In taking pictures of stars, an exposure of several hours is sometimes necessary. Photographers then mount their cameras on carriages which move automatically, just fast enough to make up for the movement of the earth, so that the lense will always be kept pointing to the same spot in the firmament.

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THE COMET HALF WAY HERE.

he had devoted his life he was willing to stake everything, and when in 1758 the comet reappeared he became at once not only the greatest astronomer of his time, but one of the greatest astronomers of all times.

"He, first of men, with awful wing pursued
The comet through the long elliptic curve,
As 'round innum'rous worlds he wound his way;
Till, to the forehead of our evening sky
Returned, the blazing wonder glares anew,
And o'er the trembling nations shakes dismay."

Today, however, the comet does not shake dismay over educated people, for Halley has proved that comets do not come from God on special errands, or bearing special warnings, but that they move in accordance with the established laws to which all the inhabitants of the starry spaces yield a common obedience.

Unfortunately, Halley's triumph came sixteen years after his death, so that it has not been possible for the world to show him the honors that are his due.

The comet appeared again, true to time, in 1835, almost on the exact date when it was expected. The 1910 appearance is accordingly the second since the correctness of Halley's monumental discovery was proven.

The principles on which Edmund Halley based his calculations are still used by astronomers, who have thus been enabled to plot the course of practically every comet that appears within working range of their telescopes. Occasionally, however, comets do not reappear as they ought to, and investigation generally shows in these cases that the lost comet has been caught by the attraction of some larger planet. Jupiter has kidnapped more comets than any other heavenly body of which we have knowledge. He now has about thirty in his train, and they form a little bodyguard which are known to scientists as "Jupiter's comet family."

Some comets are known to have suffered a worse fate than mere slavery. It occasionally happens that Jupiter, in a malicious mood, will seize upon one of these harmless wanderers and snap him off into vacancy, or even tear him to pieces.

Sky-Murder.

To all intents and purposes a comet so broken up is murdered, for it can come no nearer to dissolution. Whether by violence, or simply from old age, every comet ends by falling apart. The fragments are known as meteors, and in this form they sometimes reach the earth. Another form of missile which sometimes strikes us "like a bolt from the blue" is the meteorite, or fire-ball.

There are two kinds of meteorites, stone and iron, the former being twenty times as numerous as the latter. In addition to the metal which gives them their name, iron meteorites have been found which contain nickel and about twenty-five chemical elements, including carbon and the "sun-metal," helium.

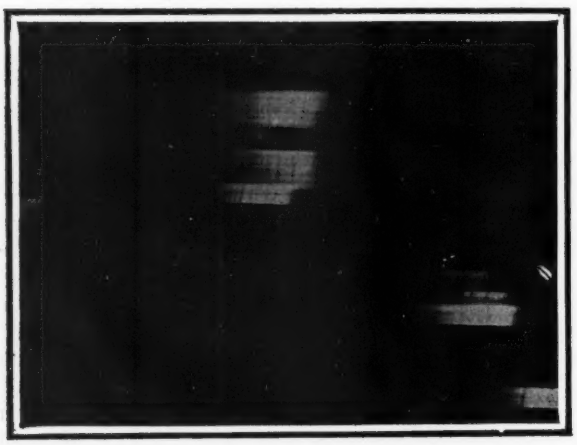
Diamonds in Meteors.

But the strangest find of all was made by a workman in Philadelphia some fifteen or twenty years ago. He had received a piece of meteorite to polish up, and when he put it on the emery wheel he found that it cut the machine to pieces. It contained a material harder than emery, and investigation showed that that material was diamonds! The interior of the meteorite was studded as thickly with tiny diamonds as a Christmas pudding is with raisins. Bearing in mind the method by which artificial diamonds are made from carbon, scientists incline to the belief that the meteorite from which this fragment came had been shot out from the sun or some other hot body and projected into the bitter cold of space while still molten, with the result that the iron within it solidified and crystallized the carbon into diamonds.

This piece of meteorite came from Coon Butte, central Arizona. Many hundred years ago this hill was hit by a meteorite about 500 feet in diameter, which came down with such terrific force that it made a hole 600 feet deep and more than 4,000 feet across. It threw up a rim of earth about it that rises 160 feet above the plain, and as it burst it scattered fragments of itself about the country for five miles in all directions. This vast cavity was at first regarded as a dead volcano, but explorations have proved the original contention that it was made by a mass of iron falling from the sky at a speed of about five miles a second.

Notwithstanding the damage done in this instance, it is found that as a rule meteorites subject the inhabitants of earth to but little danger. They generally fall on a slant, which allows the air blanket to slow them up, so that when they do finally drop their velocity is not much more than tht occasioned by the force of gravity.

The Coon Butte meteorite is supposed to be part of the nucleus of a comet that was caught up and broken to pieces by some other planet, which then used it as a missile to hurl at us. For smaller meteorites other origins have been suggested. Some astronomers consider that they may have been shot out of the giant volcanoes of the moon; while one scientist has made the historic suggestion that the first germ of life may have been brought to our earth by one of these bodies, "a fragment of an exploded world!"



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A SPECTRUM OF HALLEY'S COMET.

By the study of these bands of light scientists are able to tell what the comet is made of. The light is drawn out into bands of this shape by placing a prism in front of the camera. The comet's spectrum is located in the middle between the two brightest star-spectra. Of the three bright bands here shown as belonging to the comet, the brightest seems to be caused by cyanogen gas, which is poisonous. The spectrum of an ordinary arc-light, which is harmless, looks exactly like the spectrum of cyanogen gas, however, so that scientists have not yet made up their minds whether or not Halley's comet is poisonous. The matter is of considerable interest to us, as this earth will probably be wrapped in the tail of the comet for three hours and a half.

PHYSICAL TRAINING AND MENTAL VIGOR

PHYSICAL TRAINING AND THE SPECIAL BENEFITS TO BE DERIVED FROM THE USE OF SWEDISH METHODS AS APPLIED TO DEAF CHILDREN ORALLY TAUGHT

BY GRACE G. GREEN, School for the Deaf, Mt. Airy, Philadelphia

IF it is the function of the school to train the growing individual for usefulness in life, physical education must require attention in any proper school curriculum, since the capacity for work, both physical and mental, is so largely determined by the physical health of the individual. We know that there are exceptions to this rule, and that, owing to unusual mental ability, success has been attained in spite of physical defects. On the other hand, serious defects in physical condition are, in almost every case, certain to hamper life's work. The great leaders in life's activities are to a large extent men of strong physical constitution, and any system of education which impairs physical health and leaves men hampered in the struggle of life is radically wrong. The physical condition of any human being at any age until growth is complete is the result of a process of physical development.

As an eminent physician has so truly said, "Could we read but deep enough, we could see that the conditions which obtained during each of the hours of the growing child's life have contributed their share in the final structure—the health and possibilities of that living being."

The Three Factors of Development.

Development is the result of three great factors — heredity, environment, and activity. Physical training concerns itself mainly with the last of these great factors—activity. However, it cannot wholly neglect the second—environment, which has to do with the external conditions, including the hygienic conditions of the home and school.

Activity—a word of very large meaning—does not mean merely muscular activity, for that is the function of only one cell—the muscle fiber. In the discharge of a nervous impulse there is the activity of the nerve cell; in the process of secretion there is the activity of the gland cell, etc.

We have evidences that the growth of a cell is largely influenced by its functional activity. A familiar example of this is the degeneracy of the motor cells in the cervical region of the spinal cord when the arm is amputated about the time of birth. Moreover, the efficiency of a cell after it has attained its growth—in other words, the adult cell—is proportional to the amount of activity it has had during its developmental period.

The larger part of the work of education is concerned with such direction of the activities of the body—particularly with the volitional activities—as shall produce the best physical, mental, and moral results. Thus we see muscular activity is necessary in the development of the physical body. Not only is this true, but the physical health of the individual is so largely influenced by his muscular activity, and muscular activity is so difficult to maintain in a physically defective body, that physical training must of necessity become a very important factor in the school life of youth.

Physical vs. Mental Development.

It is quite clear that the mental education of a child begins when his physical development is still going on, and that the work of the school-room is a hindrance to normal physical development. The child must give up his play to learn his lessons. He is required to sit still for hours in desks—too often unsuitable ones and out of proportion to the needs of his body. The school, therefore, is not conducive to the highest physical development. And the pupil, as he leaves

school, can never be capable of the same powers of endurance that we find among the less cultured classes, under otherwise favorable conditions; nor is there any need probably of his ever reaching that stage of development in order to perform his work in life. But it is needful that he should leave school with his health unimpaired; that he should not be stoop-shouldered and narrow-chested; that his carriage should not be awkward; that he should not be physically lazy and disinclined to take the amount of exercise required to maintain his health. In other words, the mental training of our pupils creates an unnatural physical environment which, if not counteracted, will in the majority of cases, tell eventually on the bodily health.

If our pupils never went to school it is probable that there would be little need, if any, of physical training. It is, therefore, one of the main functions of physical education to offset the injurious effects of the unnatural environment created by mental education.

The Elements of Physical Education.

Physical education, therefore, in order to meet the needs of the pupils thus imposed by the conditions of school life, must always provide two features—the general hygienic and the corrective.

Swedish gymnastics, the system in use at present in our school at Mt. Airy, is primarily concerned with the second of these two objects, yet its use of the corrective element is employed in such a way as not to sacrifice the general hygienic effects. The most distinctive feature is that it *never* loses sight of the corrective element. Gymnastic movements, which, though graceful in themselves, have a tendency to produce anatomical faults, are rigorously excluded. And in the exercises prescribed which make up each drill or day's order, and from one day's order to the next, there is always the element of progression. In any course of training one should begin with the simpler work, and gradually take up the more difficult, as the body improves in physical condition. I have often had people say to me that exercise was of no benefit to them when they began by taking the most vigorous trunk movements possible or started with a five-mile walk. In progressing from the simple to the more difficult, the exercises of each day's order are so chosen that the former prepare for the latter. In its progression no other system compares with the Swedish in this respect. For this reason, as well as for reasons which the purpose of this paper does not require to be discussed, the day's order is classified into Introductory (including leg movements and marching), Span Bending, Heave, Balance, Back, Abdominal, Lateral Trunk, Running, Vaulting, Jumping, and Respiratory exercises.

The Value of Swedish Movements.

All these different classes of exercises include the use of every group of muscles of the body, so that each is given its proper functional activity. The entire mechanism of the nerves and muscles is brought into play, thereby raising their general tone, so that the body becomes more capable of the demands for work made upon it.

Take, for instance, the first class of movements, the leg movements, calling into use the largest muscular masses of the body. They not only bring about the effect just mentioned above, but also serve a corrective purpose in developing the muscles employed in the mechanism of walking and in standing, and to some extent in co-ordination.

Correcting a Shuffling Gait.

Included under the head of introductory exercises is marching. The relation of the feet with the toes pointing downward, the proper distribution of the body weight, the extension of the knee and hip joints, are factors which are taken into account, especially in the training of the deaf to correct their shuffling gait, and insure a better carriage generally.

How to Prevent a Faulty Posture.

The Span Bending, Heave, Back, Abdominal, and Lateral Trunk movements

all are largely concerned in correcting faulty posture. The Span Bending movements, by vaulting the chest forward and contracting the muscles of the abdomen and pushing the hips back, have the effect of straightening the spine. The Heave, by hanging positions and extensions, has the effect of expanding the upper part of the chest and developing the arm and upper trunk muscles. The Back, Abdominal, and Lateral Trunk, by flexing the spine forward, backward, and sideways, not only train the use of the muscles employed in these flexions, but are the chief exercises for correcting and preventing faulty growths of the spine. This is particularly true of the class of Back movements, which also bring into play the muscles of the shoulder girdle and effect a correct carriage of the shoulder blades.

Helping the Digestion.

The Abdominal and Lateral Trunk, by alternately increasing and decreasing abdominal pressure, stimulate the peristaltic action of the intestines and thereby favorably affect the process of digestion.

The Balance movements train in nervous co-ordination of movement. In fact, the highest degree of co-ordinated action is demanded in these exercises. They require, with the body weight supported by one or both feet, that equilibrium shall be maintained under the most difficult positions. They also help to produce correct positions of the body at rest as well as a graceful carriage in walking.

Running, Jumping, and Vaulting, as their names imply, require the most vigorous use of the muscles, and make the greatest demands upon the heart and lungs. They thus bring about the highest degree of the general physiological effects of muscular exercise.

Developing Stamina.

Respiratory movements develop the use of the muscles of respiration and in such a way that deep breathing will become a natural, involuntary, rather than a conscious act. In all the exercises, not only in the special respiratory exercises, but also in the more vigorous, such as running and jumping, full and free respiration is always insisted upon. Thus the capacity of the chest is increased, the lungs are alternately inflated and deflated (if I may so use the word). With greater ease in respiration during vigorous work comes greater power of endurance, and thus the possibility to resist disease.

I have given in brief outline the special points of excellence which recommend the Swedish system to its place in the educational life of the school-child. These same special points of excellence as applied to the school life of the deaf child are apparent to those intimately concerned in the teaching of the deaf. However, many of these special points have a particular and twofold value when applied to the deaf orally taught. And I wish now simply to call your attention to these and to the results we feel we have accomplished in our own growing Department of Physical Training.

How the Eye Is Trained.

Each group of exercises, or the day's order, so called, is taught by word of command, the description and demonstration of a new exercise always preceding the command. Commands, which include the words of preparation and of execution, are given with the voice in a natural and animated manner, to which the pupils respond promptly by a definite movement. As a ready response is always expected, the pupil must be alert; his mind cannot wander nor his movements lag. Thus the eye, serving the purpose of the ear, develops keenly-trained observers. By use of the command the pupil is master of his whole body; he creates the movement, although he is obedient to his teacher. Obedience to command is training in discipline. The execution of definite movement with accuracy and precision is training in volitional control.

Mere physical exercise in general is not training. Training comes through specific direction and methodical execution. As Dr. Hough writes, "It increases the efficiency of the mechanism of skilled movement." One who has had training in the execution of such movement, at

the word of command can do with the muscles what it is unlikely that he would be able to do otherwise. The body becomes more supple and the number of its possible movements is not reduced as life advances. It prevents, in other words, the narrowing of the field of volitional control, and it is of especial importance that the field of volitional control shall not be narrowed during the period of development. But to the deaf child the use of commands means even more than the development of his volitional control and cultivation of attention.

Cultivating the Verbal Memory.

They promote speech-reading and cultivate memory. He naturally thinks in pictures and expresses these thoughts in gestures. His verbal memory requires cultivation. In interpreting the words of command from the lips of the teacher he thinks in words and responds by definite action. Thus a much-needed stimulus is afforded the language centers of the brain. By this means the exercises never become automatic, for, in order to interpret the command from the lips correctly, his mind must ever be ready and active. For the deaf, the method of conducting the exercises by commands serves a double educational purpose. This indeed is not merely bodily gymnastics; it is mental gymnastics. I often hear the criticism: Is not this too great a strain on the child? The answer to this criticism is found in the faces of the children. What measure of enjoyment or strain is indicated there? Just so much as is found expressed in the conduct of the teacher will be found in the faces of the children. She can make or destroy strain; impart indifference or enthusiasm. The class reflects the spirit of the teacher.

From those who have made a study of the physical characteristics of the deaf, we learn that they die in a larger proportion than hearing people of those diseases resulting from poor nourishment and unsanitary conditions generally, and from affections of the respiratory tract.

Mouth breathing is quite common among the deaf.

As has been stated under the general headings, respiratory exercises are everywhere recognized as of utmost importance in the practical work of Swedish gymnastics. Merely ventilation of the lungs and a greater amount of oxygen taken to the tissue is, we see, only one of the effects of respiratory exercises. They also aid in the return flow of blood to the heart, and are an important factor in causing the flow of lymph from the lymphatics. Dr. Hough writes "that their increase during muscular exercise aids the heart at a time when it is apt to be overworked, and increases largely the flow of lymph, not from the working organs alone, but from all the organs of the body."

There is good reason to believe that a good steady lymph flow from an organ is an important condition of its healthy nutrition, and that the increase of lymph flow from all the organs of the body, brought about through the increased respiratory movements, is one of the chief agents through which muscular exercise probably affects the body as a whole.

An Aid to Better Speech.

Not only are the respiratory exercises an aid to better nutrition, to increased lung capacity and to endurance, and to greater possibility to resist diseases to which the deaf are prone, but they are an important factor in the acquisition of better speech. Exercises in deep breathing, together with those of the arms, chest, abdomen, and lateral trunk, are most favorable to control of respiration and to better tone production.

What the Figures Show.

We have only to look at the records of the physical examinations of our own pupils, taken at the beginning and ending of the school year, the results of which have been tabulated in our annual reports, to note the increase in strength and endurance. The increase in lung capacity, the most vital tests perhaps of

all, has been most encouraging. Calculations made from the records two years ago show that the average lung capacity of our girls of sixteen then attending the gymnasium was 21, which is three-tenths cubic inch greater than as compared with the records of girls of the same age made the year of the introduction of gymnastics. It is also interesting to note, in the comparison of our results with the observations made from hearing children, that, although our girls at the age of 16 weigh two and three-tenths pounds less and measure one and two-tenths inch shorter than the physical type of hearing girls of the same age, their lung capacity is nine and three-tenths cubic inches greater.

Since the introduction of gymnastics there has been improvement in the general carriage of the pupils. The dragging of the heel is to a great extent eliminated. the step is more elastic, and the gait altogether less shuffling. In the marching evolutions on the floor of the gymnasium this is especially noticeable. A keen sense of Rhythm has also been developed by use of a quicker and shorter step in marching.

The Power of Co-ordination.

Nowhere has improvement been so marked as in the power of co-ordination. This has been brought about by the repeated use of balance exercises throughout the day's order. The significance of these exercises is at once seen when it is remembered that "it is exactly this co-ordination which is of the greatest use in our daily life," and to those who have made a study of the physical characteristics of the deaf the particular significance of these exercises is at once obvious, for it is this very power of co-ordination in which the deaf are so lacking. Since the introduction of Physical Training the pupils as a class are more ready and alert, their eyes keener and brighter, and their response quicker and more accurate than formerly.

I have been repeatedly told by teachers in the class-room that the gymnastic exercises have been just the needed stimulus to awaken the class, particularly the slow and unresponsive child, and that the attention has markedly improved immediately following a drill or day's order. There is no question, I think, that the mental and moral caliber of the pupils has widened, the latter especially, by the use of games.

Games and Play.

I would indeed omit a very large feature of Physical Training were I to neglect that of games and play. Formal gymnastics, added to an already crowded curriculum, might tend—in fact, would be very likely — to induce additional fatigue unless provided with the attractive elements, encouraging the play instincts.

The fact that gymnastics so often takes the place of the recess or the play hour is evidence that its real scope is misunderstood. Necessarily there is the element of recreation, but always under the guidance of the teacher. No systematic training can replace spontaneous activity. The child is not entirely free to do his own bidding. It is only in play that he is himself master; he is the unit of force; he originates his own conditions; and right there is the distinction between play and games, for even in games he must submit to the condition made therein, and exercise that self-control which governs the conduct of the game. Both games and plays, however, offer large means of expression, and, as they provide relief to the fixed attention necessarily demanded of the deaf during school hours, are a safeguard to over-repression.

Physical training is so intimately connected with the entire daily life of a child that it is impossible for those in charge of gymnastic instruction to be wholly responsible for his physical development. They can only give to him the exercises needful to the correction of faulty posture and development of his physique; to influence him to a realization of such need and of his own responsibility and co-operation in the matter. It is to those who are with him

each hour of the working day that the largest work falls and with whom the greatest influence lies.

Supplementary Work.

Seventy minutes of gymnastic instruction weekly (for this is the time allotted in our own school) cannot counteract the effects produced by twenty-five hours of mental work plus fifteen hours spent in the shop. If the pupil is to be benefited by his gymnastic training, he will have to be constantly reminded of his position at his desk or at his work-bench; or in his carriage to and from his classroom. Physical education, if it is to correct physical defects, concerns itself not only with gymnastic instruction; it has to do in a way with feeding, clothing, bathing; with hours of sleep and rest and recreation, and with fresh air, and with the matter of breathing. It has to do with the waking hours of the twenty-four—nay, more, it has to do with the sleeping hours as well. The gymnasium, therefore, is only the supplement of the home life and the school life of our children.

In our splendid institutions for the deaf, where all physical ailments are cared for by eminent physicians, we are apt to feel that little responsibility lies with us; but it is for us to be ever mindful that these ailments, whether of sight, of adenoid growths, or of too rapid growth, occasioning loss of vitality, and so on, must be reported, and we must be ever watchful to detect these ailments in the incipient stages, before the real harm is done and before it is too late.

Since the child is taken from the home to be educated by the state, it is our duty to see that the assembling of pupils to sit for consecutive hours daily be under the best hygienic conditions possible—a duty more to be emphasized when we consider how susceptible the growing child is to the influences resulting from faulty posture. We teachers and officers having this responsibility in keeping should see that the home, the schoolroom, and the gymnasium alike is a place where there are the best light, the best air, the best positions; where body growth keeps pace with mental growth, and where, best of all, a happy atmosphere is sought, for truly "happiness is the surest source of health, both mental and physical."

THE STORY OF "VISIBLE SPEECH"

THE MECHANICS OF SPEECH AND ITS PICTORIAL EXPRESSION—SOME ACCOUNT OF ITS BRILLIANT INVENTOR, HIS VISIONS, TRIALS, AND DISAPPOINTMENTS—WHAT THE UNIVERSAL ALPHABETICS CAN DO FOR THE SPEAKING DEAF, FOR STAMMERERS, FOR STUDENTS OF LANGUAGES, FOR PHILOLOGY, FOR ESPERANTO, FOR STENOGRAPHY, TELEGRAPHY, AND FOR THE BROTHERHOOD OF MAN

BY M. GARDINER

Editor of The Volta Review's Monthly Department of Universal Alphabetics

ALEXANDER MELVILLE BELL was a distinguished teacher of elocution, corrector of defective speech, and a Shakesperean reader. An enthusiastic student of the English language, of whose beauties and capacity he had an exalted opinion, he himself spoke it with a purity and clearness of utterance that made listening to him a delight and revelation.

At a time when to an even greater degree than today it was held that defective speech is due to malformation of the vocal organs, for which a "cure" is necessary, he realized that in most instances it is due simply to nervousness or to the careless thoughtlessness of parents who allowed their children to continue into adult life imperfections of speech that had been attractive in childhood.

For years Mr. Bell studied means for better assisting such sufferers. Realizing that before one can propound a remedy for wrong ways of doing things it is necessary that the right process should be clearly understood, he devoted himself to an exhaustive study of the mechanics of speech.

Principle of the Symbols.

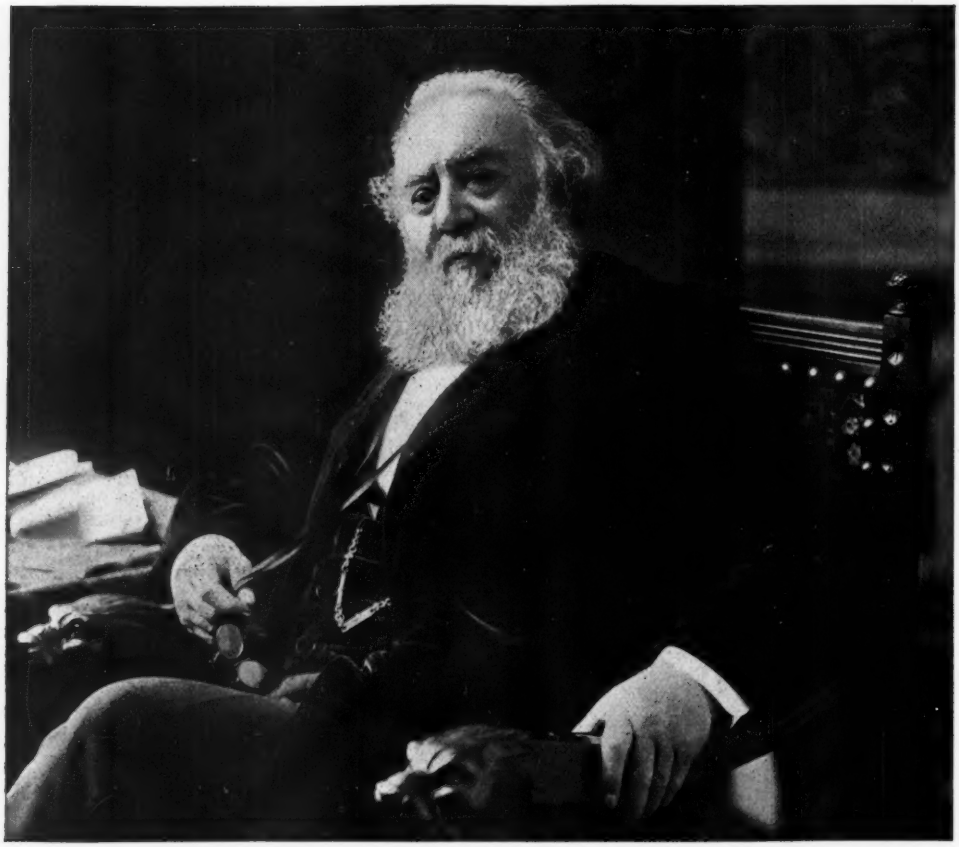
Gradually the idea came to represent this mechanism pictorially. He would discard all adventitious means of explaining to his pupils what he required of them, and make a system of alphabetics or characters in which every line was based on the shape of that part of the mechanism employed in the production of a sound, thus making a portrait of its position at the instant. Thus a pupil, seeing a character, would know exactly what position his vocal organs should assume to produce the sound represented.

Twenty years were consumed in this work, but at their close he had succeeded in perfecting a system by which every sound of which the human throat is capable, from the first wailing cry of the new-born infant, the kiss of love and scream of hate, the crude utterance of Bushman or Eskimo to the polished diction of civilized European and Asiatic, can be represented. Out of the mouths of his sons he made good his claim. He would, in their absence, write carefully from dictation strange sounds in Hindustanee, Chinese—anything—and recall his boys, who, after seeing the characters, reproduced the sounds with a correctness marvelous to the hearers, who in many cases had spent months in the vain endeavor to get these same sounds from their pupils.

From its start as a means of helping his pupils, Mr. Bell's pictorial alphabet had thus developed into a means whereby all languages and dialects could be easily mastered. No thought of its use in teaching the deaf to speak was in his mind at first, and this was never chief with him.

A Vision of the Future.

He had the great idea that his invention should be a world-wide civilizing agent, aiding the brotherhood of man by lowering the barriers raised by the difficulty of mastering each other's languages.



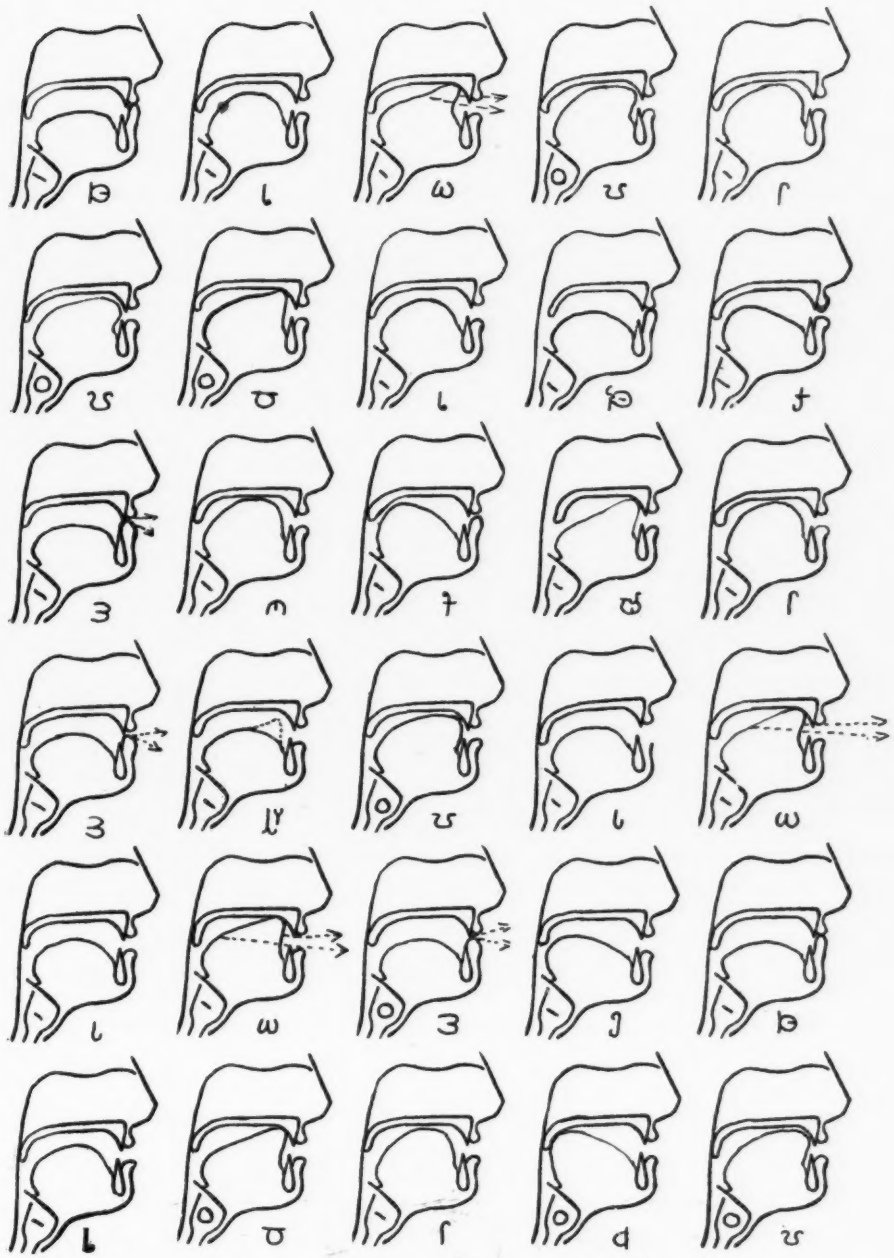
ALEXANDER MELVILLE BELL, F.E.I.S., F.R.S.S.A., F.A.A.A.S.

Author of "Principles of Elocution," now in its 220th thousand; of "Principles of Speech and Dictionary of Sounds;" of "Faults of Speech," "Elliptical Steno-phonography," etc., etc.; inventor of the Universal Alphabetics, described in this article.

Once one knows how to do a thing, the doing of it is a matter of comparatively short time and practice; so, by means of Visible Speech, as he called his invention, Englishmen would be speedily speaking correct Chinese, and Chinese English; stammering would be a thing of the past, and scientific men would be able to standardize the pronunciation of all words and to preserve for all time the correct articulation of languages and dialects fast passing away with the passing of the Bushmen and Indians who used them; novelists could portray the idioms of their characters with a correctness impossible now.

Mr. Bell went further; he produced two abbreviated forms of his alphabet for easier writing, and evolved a system of shorthand based on its principles which experts declared was in theory and practice superior to Pitman's. He also adapted it for use in telegraphy, holding that it was less susceptible to error in transmission between countries with different languages. All these forms of his invention were so simple and easily understood that their underlying principles could be understood almost at a glance and the system learned in a few hours.

With perfect generosity and a child-like faith in the readiness of the world to accept a good thing when shown, he offered his invention freely to the English government.



DIAGRAMMATIC PRESENTATION OF SOME SPEECH SYMBOLS.

As is shown in this illustration, the "symbol" is but a conventional diagrammatic expression of the position assumed by the organs of speech in making the sound expressed. The key to these symbols is to be found in THE VOLTA REVIEW, which contains a monthly department of the Universal Alphabetics, conducted by the writer of this article.

Discouragement and Reverses.

Much interest was excited and for a time it did seem as if Bell's Universal Alphabet of Visible Speech might obtain a hold which would enable it to grow and today number its million of adherents, as does Esperanto. But the enthusiasm of youth and the backing of money were needed, and just at this point misfortune overtook the inventor. Two of his sons—those to whom he had chiefly looked for the propagation of his method—died within a short period of each other, and the health of the third became so seriously impaired that desperate measures were necessary.

Unhesitatingly he disposed of his practice and possessions and, leaving London, buried himself and his family in a little town in the middle west of Canada, where outdoor life was possible. He saved his boy, Alexander Graham Bell, but he sacrificed the ambition of his own life and abandoned the work of twenty years just as it seemed about to become established.

Graham Bell's Work.

With returning health Alexander Graham Bell applied his father's invention to the use of the deaf—one class only, and a small one, of those who could be benefited by it—and today this system, either directly by means of the pictorial alphabet or indirectly through the principle he discovered and expounded, and by means of his charts and diagrams, underlies all modern American articulation work.

Melville Bell never again attempted to push his invention into use. With the death of two of his sons and the gradual absorption of the remaining one in other pursuits, he seemed to lose heart, and during his lifetime the wider applications of his work remained in abeyance. After his death his property, bequeathed to his son, became available for these purposes.

The Work of The Volta Review.

Now, in its department of Universal Alphabetics, THE VOLTA REVIEW is to take up his work where, in supreme self-sacrifice, he laid it down, and to carry it on to ultimate recognition as the most practicable means ever devised for the purposes for which it was designed. These are: To give better speech to the deaf and persons handicapped by defective speech, uneducated persons, and foreigners struggling with our unphonetic language; to enable persons to master foreign tongues quickly and accurately; to afford a scientific basis for the study of philology; to be an indispensable adjunct of such enterprises as the Esperanto language, which contains one defect—the impossibility of standardizing the pronunciation of their letters—a defect the Bell Universal Alphabet seems especially designed to remedy; to afford a better system of stenography and of universal telegraphy—in short, to provide a method of study which shall meet the wants of all who speak; that is, of every one.

BYWAYS OF DISCOVERY

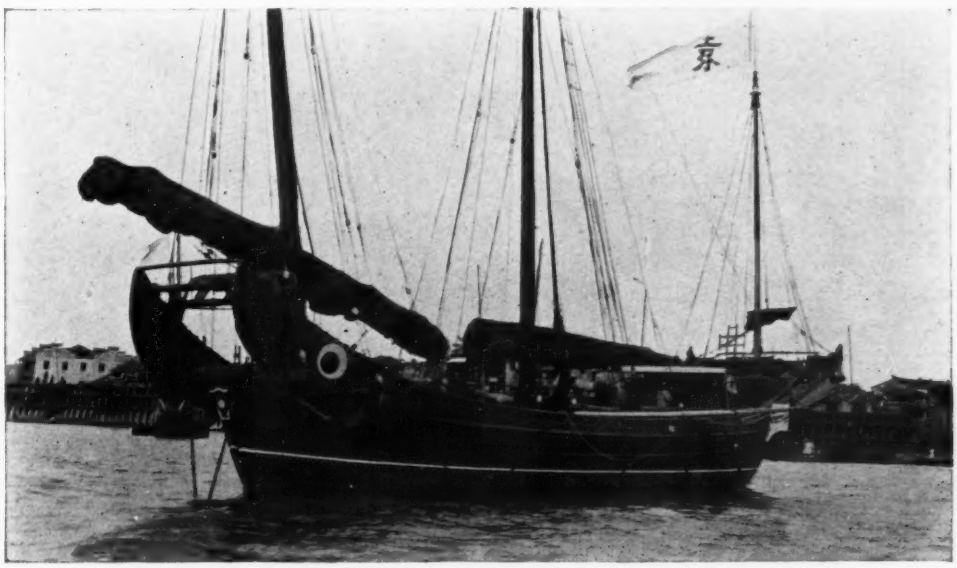
NOVEL FACTS IN SCIENCE AND NATURE—PARAGRAPHS OF INTERESTING INFORMATION GLEANED FROM EVERYWHERE

Speaker Cannon, of the House of Representatives, is left-handed.

"A good authority on horses" is quoted as being responsible for the statement that grays live the longest, with the roans coming next. Blacks are said rarely to live more than 20 years, while creams generally die at the age of 10 or 15 years.

The Guatemalan government now has direct supervision over all electrical enterprises in that country, and supplies can be granted by the war department upon application.

Chinese boats have eyes painted in the bows, for the reason, it is said, that the natives think the boat must have eyes to see whither it is going.



THE BOAT WITH EYES. From a Photograph by David Fairchild.

Migrations of Birds and Sea Creatures.

As an instance of bird migration, it is recorded that a stork shot in Natal was found to bear about its neck a small brass ring containing the name of a professor in Buda-Pesth.

The extent of the journeys taken by sea creatures is indicated by the fact that a number of seals have been taken off the Falkland Islands that had been branded with the United States mark used at the station in St. Paul's Islands, in Bering Sea.

All rope used in the British navy contains a scarlet thread woven into the hemp. This device is employed for the same reason that many large firms perforate their postage stamps with a private mark—in order to prevent the theft of supplies by employees.

It is said that all ascents of airships and flying machines in Russia are now closely watched, as the Czar's advisers are fearful that bombs may be dropped on the royal palace by revolutionists.

From a Photograph Copyright, 1910, by Underwood & Underwood.

THIS PITCHER NEVER GETS A "GLASS ARM."

The United States Navy is introducing a new compass into the service. In this new compass the intricate old directions give place to a series of numbers, running from zero, which is the true north, to 360 degrees. Thus, instead of ordering the helmsman to steer southeast by south, the order would be 146½ degrees.

CLARK SAVED TREES LIKE THIS FROM FATES LIKE THIS.

The California "Big Trees" are survivals of the long past ages when this continent was a tropical jungle. Any tree of this species which is less than 18 feet in circumference is considered a "runt." This specimen contains as much lumber as is ordinarily grown on 15 acres of timberland.

Automatic Baseball Pitcher.

A warrant officer in the United States Navy has invented a gun which can shoot a baseball at the batter faster than any pitcher can "put it over." The gun is worked by compressed air, and an attachment provides for "shooting curves," which can be made as wide as 8 feet. The accompanying photograph shows the gun in use on the ball-grounds at the Annapolis Naval Academy.

Russia has carried on its armament of machine guns so that at the end of 1909 every infantry regiment, including the reserve (except the Cossacks) had a machine gun battery of four guns, which number is to be increased in case of mobilization to six.

A Hero of Arbor Day.

Galen Clark, the friend of the California "big trees," is dead. Clark was a pioneer of the Yosemite Valley, and was for 20 years guardian of the tract while it was under State control. When the valley became a Federal reservation Clark was still allowed to live in it. The accompanying picture shows the sort of devastation which he stopped.

A number of German manufacturers use blotting paper with which to clean their machinery instead of the usual coarse waste, which is full of dust and other impurities.

In the rural sections of Brittany, France, all the girls marry on the same day.

It is said that the Bank of France guards its treasure vaults every night by walling them up with Portland cement, or some like composition, and then flooding the cellars in which the vaults are located. The water hardens the cement, and thus the robbers who attempt to make entry must not only wear diving suits, but be equipped with blasting machinery as well.

A French inventor has introduced the army of his country to a combination spade and shield. On the march the implement is worn over the heart to protect the vital organs, while in battle the soldier uses it to throw up a little breastwork. This conceals his body, while his head and shoulders are kept out of harm by sticking the spade shield into the ground in front of him.

Akron's Rubber Industry.

Akron, Ohio, the center of the rubber industry in the United States, has 14 rubber factories in which $25,000,000 of capital has been invested, and which give employment to between 11,000 and 12,000 hands.

Glass water pipes covered with asphalt have been used for a long time in some parts of Germany. This form of water pipe is said to be perhaps the most sanitary yet devised.

A "ten-thousand-day clock" has appeared in England. In this ingenious timepiece the usual weights and springs have been succeeded by a small dry battery.

At Chalais-Mendon, near Paris, there is a factory which weaves spider webs into ropes for the use of military balloons. These ropes are lighter than silk.

At the Clarks Harbor, N. S., dog-fish works it has been found that the skate is perhaps the chief enemy of lobsters.

The Ohio State University has started a two-weeks' course in ice-cream making as a part of the work of its dairy school.

Argentina's Big Battleships.

The Argentine Republic has ordered two battleships of 27,000 tons displacement, which is a size of vessel 1,000 tons larger than any other battleship yet built. The steel-makers of this country took the contract for the construction of these battleships away from their European competitors, who had built nearly all of Argentina's former floating armament.

Our Careful Post-Office Department.

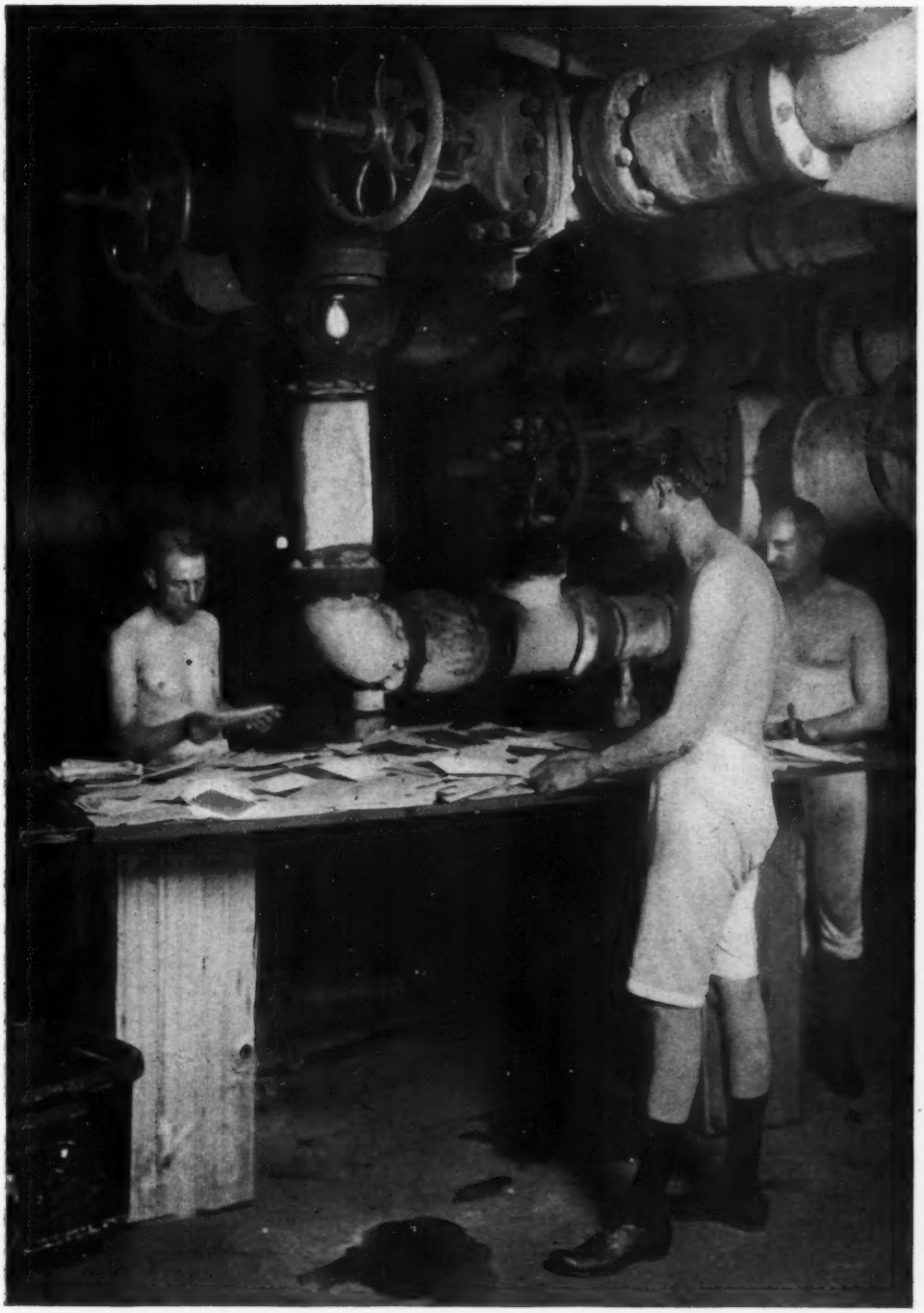
The photograph on the opposite page illustrates the pains which the Post-Office Department takes to deliver all mail entrusted to its care, as well as the physical discomforts which the postal employees are sometimes subjected in the effort. Six months after the steamer *Finance* was sunk off New York harbor, at the very end of her long journey from Panama, the mail sacks were salvaged and taken to the furnace-room of the post-office building in New York, where, according to the photographer, the letters were dried under a heat of 150 degrees, in which the mail-sorters were compelled to work.

Old trappers in Canada declare that good seasons for fur-bearing animals come in cycles, and these cycles are dependent upon the crop of rabbits. The great hunting ground of one year may be worthless the next because of a dearth of rabbits, upon which fur-bearing animals feed.

London's "Telephonic Post."

The London post-office has started a service called the telephonic post, the users of which may receive the mail that comes in Saturday night by telephone on Sunday morning, thus saving a 24-hour delay. The service costs six cents for every thirty words, and two cents for transmitting it to the telephone station, where it is read over the wire to the addressee.

The public library of Chicago kills the germs in its books by electricity.



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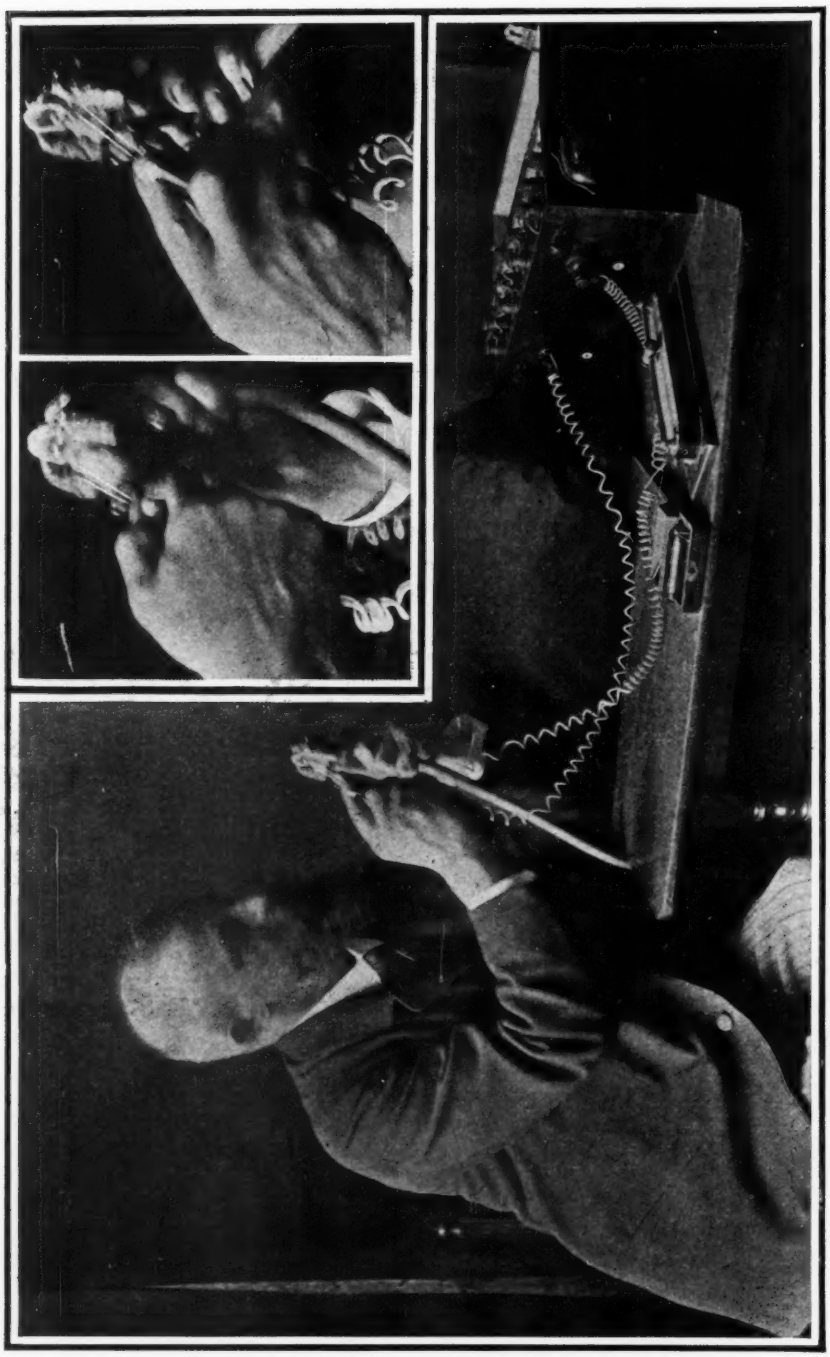
HEAT, ONE HUNDRED AND FIFTY DEGREES; COMPENSATION, TWO CENTS.



ARTIFICIAL PRODUCTION OF THE VOICE.

Copyright, 1910, by The Scientific American.

The left hand and right hand small engravings illustrate, respectively, the form assumed by the larynx in emitting a deep and a high note.

The Seat of the Voice.

Of the greatest importance to all teachers of speech is the announcement that Dr. Marage, of the Paris Academy of Science, has demonstrated that "the voice results from an intermittent vibration of the larynx and the air within it, reinforced by the resonance of the mouth and other cavities situated above the larynx." Dr. Marage proved his contention by removing a larynx from a dog and forcing a current of compressed air, heated to 98.6 degrees Fahrenheit, through it. According to the Scientific American, which contains a complete account of the experiments, the muscles of the larynx were stimulated by a small induction coil, which was energized by a storage battery, and the sounds emitted were recorded on a phonograph.

So controlled, "the excised larynx of the dog barks and howls in every note of the canine register, from the deep baying of a mastiff to the shrill pipe of a terrier. * * * The pitch of the note seems to be independent of the pressure of the air and the strength of the electric current, and to be determined solely by the part of the muscular system of the larynx to which the stimulation is applied. The whole larynx, including the glottis and the epiglottis, changes its form with every change in pitch. Hence the larynx is a musical instrument which produces various notes by changing its form and dimensions.

"These experiments, in addition to their purely scientific interest, explain the sudden loss of voice to which singers and public speakers are often subject. The loss of voice has nothing to do with the vocal cords, but is caused by a sudden contraction of some of the muscles which control the glottis, and is analogous to the rheumatic and neuralgic pains which appear suddenly in various parts of the body."

Christiania, Norway, is to have the largest electric generating plant in the world. As a by-product the plant will make saltpeter out of the nitrogen in the air.

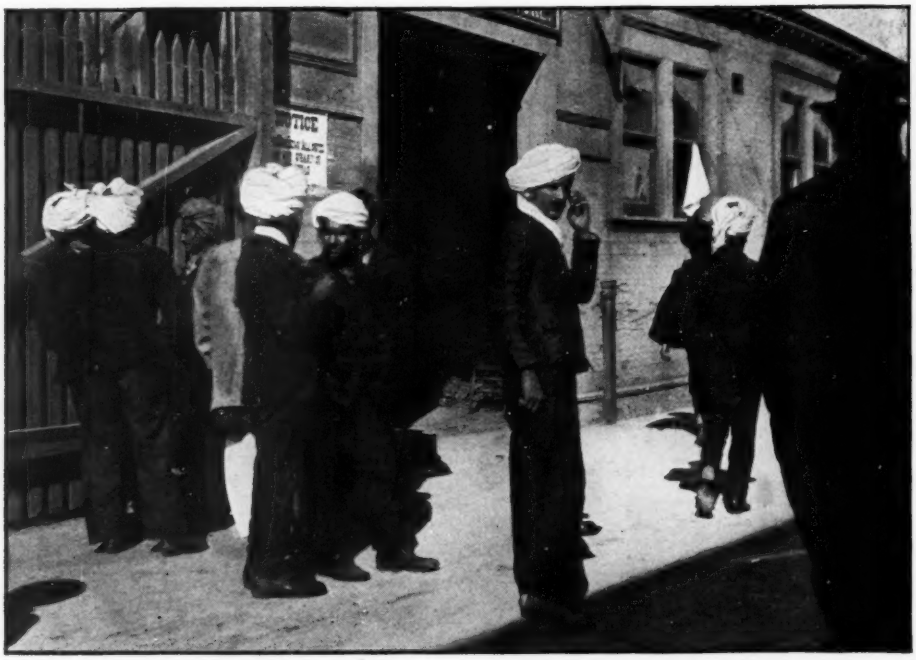
Herr Gehricke, a German inventor, has patented a device to insure safety to trains which jump the track. The device consists of an adjustable rail attached to the trucks of cars, about one inch above the track-rails, and parallel with the axles. If the train should jump the track, the safety-bar rests upon the track, preventing the wheels from touching the ground, and the train slides along on the track-rails till it comes to a dead stop.

Mrs. Maud Ballington Booth, head of the American Volunteers, has appealed to her neighbors in Montclair, N. J., to bell their cats so as to save the birds of the city. The tinkling of the bell will, Mrs. Booth thinks, serve as a warning to the birds of the stealthy approach of their enemy.

Our Newest Immigrants.

When the immigration laws excluding Chinese laborers were passed, California thought that she had been relieved for good of the peril of cheap labor, but alarm on this score has been renewed within recent months, following the entrance into this country of a large number of Hindus. According to figures quoted by "Collier's Weekly," through whose courtesy the pictures on the next page are reproduced, there are now 10,000 Hindus in California, and the rate at which this number is increasing may be judged by the fact that no less than 327 of these turbaned foreigners arrived at San Francisco within a single week. The Hindu is said to make a very unacceptable American, as he is willing to work for very little and absolutely refuses to give up any of his habits of life. It is, however, impracticable to exclude Hindus under our present immigration laws, for the reason that the Hindu is not only a white man, but a British subject with rights to be respected.

In France, Germany, and Sweden rugs are made out of paper that has been spun into yarn.



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OUR TURBANNED IMMIGRANTS.

CALIFORNIA'S YELLOW PERIL HAS BEEN SUCCEEDED BY THE HINDU INVASION.

The upper picture shows an every-day scene along the San Francisco water front, while in the lower picture a shipload of immigrants is seen disembarking.

SUGGESTIONS TO TEACHERS

CLASS-ROOM HELPS "WITH THE CRAYON-DUST ON THEM"—WRITTEN BY TEACHERS FOR TEACHERS

A valued correspondent of THE VOLTA REVIEW, *one of the foremost educators of the deaf in America, writes us as follows:* "What we need and desire is information as to improved methods of teaching the deaf—matter that will be of assistance to us in the school-room. Matter straight from the class-room, with the crayon dust on it, is what appeals to us, and we want plenty of it. The publication that will fulfill our needs is one that will serve as a substitute for personal visits to class-rooms in schools for the deaf throughout the world; visits which we cannot make, because we are held by our own work." *This department is designed to fill this need, and it will appear as often as we receive contributions for it. Contributions should be from 300 to 500 words long. If they outgrow that size we shall be glad to receive them for publication in the body of the magazine. Anything accepted, either as a contribution to this department or as a full-size technical article, will be paid for.*

THE CHILD'S SUNDAY

By Amy M. Pleadwell, Horace Mann School, Boston

ONE of the pleasures in teaching drawing to young deaf children is their delight in another mode of expression. *Illustrative drawing* is a never-failing source of amusement. "I saw"—and then the joy when the teacher reads the picture rightly. For a Sunday occupation this can be used in two ways.

Drawing a Story.

A story may be told and the child illustrate it, or he may picture for you his own stories. One child, who was just beginning to draw, saw and reproduced from memory a Memorial Day procession. Although it is a scribble, I mounted it to show what first-grade children will do with but little encouragement. These illustrations may be incidents of the day, life at home, in the streets, country, his church, toys, objects, or anything you suggest. If you cannot

CORRECTING IMPEDIMENTS OF SPEECH

By Clara Louise Gordon, Ft. Worth, Texas

WHILE teaching in the Oral Department of the Washington State School for the Deaf a very interesting case of imperfect speech came to me for correction. For the benefit of others who may be similarly afflicted I shall give a brief synopsis of my experience with this case.

A young man, twenty-four years of age, who had never been able to speak intelligibly, called upon the superintendent of the Washington School to ask his advice as to what he would better do to improve his speech. He realized his condition, felt that something might be done to improve it, and started out with the determination to do it. Before going to the Washington School he went to see a throat specialist in Portland, Oregon, for an examination, in order to ascertain whether there was any malformation

(*The Child's Sunday.*)

draw, you can give the language for his expression and show him pictures of the things he is attempting. You will be surprised at the interest shown in correct representation. Neighborly criticism will become dramatic, and rivalry in the best memory work is absorbing. If a pupil is in doubt about the correct base of a United States mail package box, and you encourage his observing it, note his delightful decision at the next lesson; or, if you criticise the roof and dome of your historic State-house, as expressed from memory by a boy who passes it daily, the next day, when that boy beams approbation upon you, you feel more complimented than if you had a picture praised! (Even if you did make a special trip to be sure of that façade—after school!) For, with these sharp eyes, one must know his spider's legs, how one's church-tower joins the roof, the number of windows and wheels a trolley car has, run the circus gamut, and know every flower that blows!

Free Paper-Cutting.

The *free paper-cutting* is used in conjunction with illustration. We begin with simple shapes of fruits, toys, and objects. I cut before them first. If the object is quite new or difficult, I repeat, cutting slowly, and they follow. They quickly do animals, houses, trolley cars, wagons, and motor cars. Last of all come stories of people in action, and these, combined with things previously studied, are used in the composition of a picture; such, for instance, as the apple, tree, barrel, and man bending or girl reaching, used in a harvest scene.

When a class has been successful in making one large composition, let each pupil make one for himself, and see the individual observation and originality develop. Colored papers add to the effect of the compositions or illustrations of stories and increase the children's pleasure. My use of them was the result of trying to utilize the backs of wall-papers, such as one gets in large sample books.

(*Correcting Impediments of Speech.*)

which might cause this very imperfect speech. The specialist assured him there was none; said the impediment was due to "the center of speech in the brain being undeveloped," and gave it as his opinion that nothing could be done for him, and discouraged his going to the Washington School. However, in spite of this advice he went.

After talking to the young man and telling him he thought something could be done for him, the superintendent turned him over to me. His hearing was normal, so he could not be admitted into the school.

I arranged to give him a private lesson every day after my school duties were over, beginning October 1. When he began his lessons he spoke so indistinctly that it was almost impossible to understand him, and it was necessary for him to resort to writing. At the end of eight months his articulation was so improved he could be readily understood by every one. He had to speak slowly, as it was necessary for him to think of positions of tongue, etc., but he articulated well. His difficulty, before being taught, was this: he put his tongue in the wrong position for everything he said. Naturally, incorrect positions produced imperfect sounds. With patience and perseverance he studied and practiced correct positions until his speech was improved.

After my experience with this pupil the importance of correct positions of tongue, lips, etc., when teaching speech to the deaf was, if possible, more forcibly impressed upon me than ever before. This case also emphasizes the importance of making an effort to correct or overcome impediments of speech, although we may receive discouragement from people who, it would appear, are in a position to know better than we. I have not seen this young man for more than a year, but he writes that his speech continues to improve, and that he has no difficulty in expressing himself. All he needed was a start in the right direction, accompanied by a determination to overcome his affliction.

THE PRICE OF WAR AND THE WAY TO PEACE

PEACE DAY, WHY IT IS OBSERVED, AND WHAT CHILDREN CAN LEARN BY IT—WAR, AS IT WAS AND IS—THE PRICE OF WAR WHEN THE NATIONS ARE AT PEACE—WHAT RECENT WARS HAVE COST—THE BUSINESS KING AND WHY HE FIGHTS—HOW WAR IS BEING ENDED—THE EXAMPLES OF CHILE, ARGENTINA, COLOMBIA, AND THE CENTRAL AMERICAN REPUBLICS—THE WORK OF THE HAGUE CONFERENCES

BY KENNETH KNOWLES

I

THE BURDEN OF WAR

ON the 18th of this month school children all over the United States will hold exercises in observance of Peace Day. These exercises commemorate the occasion, ten years ago, when the civilized nations of the earth met together, for the first time in human history, to end war. That meeting is one of the "beacon lights" of progress, and, for that reason, if for no other, it deserves to be remembered. But in another sense Peace Day is a most important celebration in our school calendar. Its importance arises from the fact that it is the only day which is dedicated to peace.

One Side of War.

We have enough days and occasions dedicated to war. Two of our national holidays—Memorial Day and Fourth of July—were set aside in remembrance of wars; the soldiers turn out, there is the glitter of bayonets, there is gold braid, there are nodding plumes and bands of music, and orations that tell of the glory of war, the pageantry of war, the honor which men win by war. The school histories are full of past war; the newspapers of present war. The measured tread of the troops, the throbbing of the war-drums, are always in the mind's eye and the inner ear of our children, and on none of these occasions is anything said of the blood and agony and tears and poverty that war causes. The historians seldom mention it; the orators forget it; the Navy Leagues that clamor for more war appropriations, the jingo newspapers that clamor for more turmoil, never think of it.

The Purpose of Peace Day.

Peace Day was founded to tell what war means, and, as it is the only day in the year set aside for such a purpose, it behooves those in charge of our schools to explain the meaning of war very carefully, so that when the child is told of the glory of war he will also think of its horror.

Formerly war meant murder, and little besides. The warriors took up their swords and cross-bows and maces, strapped on their armor, mounted their chargers, and did their best to murder each other until peace was declared. When the war was over the cost of the war ended, so far as the state was concerned. There were no pensions to pay, no arms to buy, for every fighter supplied his own arms, and no tremendous standing army to support, for the most of the soldiers were industrious citizens who earned their own livings when they were not needed in battle. In the old days war was cheap. It also had at least one good result: it killed off the weaker men, who could not stand a hand-to-hand encounter. The chief effect of war in those rough times was to make man rather more of a brute than he should be.

Modern War and Modern Poverty.

Today war does not leave the best men of the nation as survivors; it leaves the worst. Weak men are no longer wanted at the front; only the most perfect men physically are enlisted. No less than

14,000,000 men died by the sword in the last century—the best manhood in the world. "Napoleon's wars destroyed the strength of France; Spain's chronic wars have left an enfeebled race."

Modern war takes its toll, not only in better blood than old-fashioned war did, but in a vastly greater amount of treasure as well. The money cost of warfare goes on, whether a nation is fighting or not, and the cost is so huge that even in time of peace the nations can hardly pay their war-bills. War is not only making men brutes today; it is making them brutes *and paupers*. Indirectly it is the chief cause of crime and disease and starvation, for these are the children of poverty, and war, which robs the workman of so much of his income, is the chief cause of poverty.

The Cost of War in Time of Peace.

This year, according to figures compiled by the American Peace Society, the nations of the earth are spending $3,000,000,000 on war. This is more than 66 cents of every dollar raised by taxation. It amounts to $2 for every man, woman, and child on the face of the earth—$10 per family.

These figures are so large that they do not mean anything. It is like saying that the sun is 92,000,000 miles away from the earth; nobody can grasp the idea of that immensity. The waste of warfare can be more readily understood by considering some of the items on this bill for $3,000,000,000. Compared with the cost of education, for instance, the United States is spending on its navy every year a sum that is greater than the combined endowments of all the colleges in this country. A single first-class battleship costs $10,000,000—enough to replace all the hundred buildings of Harvard University, together with those of the Tuskegee and Hampton Institutes, with something to spare for an endowment besides. Every time one of these battleships fires a gun it costs $1,700—almost enough to keep a deaf child for six years in one of the public institutions of New York.

In time of peace a battleship is reckoned to have outlived its usefulness in ten years. As for its life in time of war, six of them went to the bottom of the sea in one naval engagement between the Russians and the Japanese. In the grimmest sense of a somewhat colloquial phrase, $40,000,000 was "sunk" on that one day. That is as much as 200,000 Russian peasants can earn in a year; it is more than they can save in twenty years.

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WAR'S LATEST TOY.

From the factory of the world's greatest maker of expensive war-toys—the Krupps. This gun, another view of which appeaed in THE REVIEW last month, is designed to shoot air-ships. It weighs three tons and a half, costs more than a house and lot, and is ineffective.

Two "Armies of the Unemployed."

We hear much about the army of the unemployed. There are two such armies, one consisting of men out of work, and the other, numbering some 2,600,000 soldiers in Europe alone, which the governments of that continent support in idleness all the time. The army of the workless exists largely because the other army costs so much.

SHE RULES IN THE HOME OF PEACE.

Wilhelmina, the young queen of Holland, at whose invitation the first international peace conference selected The Hague for its meeting place. The Palace of Peace has now been built at The Hague as a permanent home for the International Court of Arbitration. This is the first photograph of the queen with her baby, the Princess Juliana, who is now about a year old.

The Gun at Sandy Hook.

In Germany it costs about $200 a year to support a soldier, and her army in time of peace numbers more than 600,000 men. In this country it costs more than a thousand dollars per soldier, but we do not keep so many soldiers. Instead, we spend our money on big cannon, like the one at Sandy Hook, for instance, which can shoot 2,400 pounds of gun-cotton a distance of 15 miles. The cost of such a machine, to say nothing of the murder it could do, is enough to "stagger humanity." Incidentally, with reference to the effectiveness of the modern battleship, it may be said that the present English "Dreadnought" has a killing power 100 times greater than the "Dreadnought" of 35 years ago.

The Cost of Recent Wars.

These are some items in the bills that civilization pays for war when there is

no war. The cost of actually fighting a war is so greatly in excess of these amounts that it is simply sickening. The Boer War cost England $800,000,000, or $18 for every man, woman, and child in the British Isles. Two years after peace was declared she was maintaining an army of 400,000 men in South Africa, while one-quarter of her people at home went hungry. Here again are the two armies of the unemployed, the one increasing as the other increased.

Russia paid $840,000,000 for the lesson she got from Japan. Japan paid $1,000,000,000 to give the lesson. Within a year after the Peace of Portsmouth was signed, the Associated Press reported a famine in both countries. Poverty, the daughter of War, had come to her own—she and her three children, Starvation, Disease, and Crime.

The United States is regarded as perhaps the richest nation in the world. It is fortunate for us. Twelve years ago we had a hundred days' fracas with Spain. We are still paying for it in our expenditures on the Philippines. Regarding these expenditures, Gen. Nelson A. Miles has said:

> "The contrast between war and peace is illustrated by the fact that what has been expended on the Philippines would have put water on every quarter-section of arable land in our country where it is required; it would have built for the farmers a splendid system of good roads, or for commerce two ship-canals across the Isthmus."

In considering these figures, there is one thing which is to be emphasized. None of these wars was a really first-rate conflict—a fight to a finish—a battle royal between two powers of equal strength. No one knows what such a war would cost. Economists hardly dare to guess. One thing is known, however: when a man loses a piece of property by war, it takes the savings of from six to fifteen years to make up for his loss; and the money wealth of a nation is the sum of the wealth of all the citizens within its boundaries.

II

THE ALLIES OF PEACE

THE times are rapidly changing. Within the last 40 years the cause of peace has received two allies from the camp of war. One ally of peace is the frightful cost of war itself; the other ally is a new kind of king, who controls all the civilized governments of the world, and whose motives for fighting are quite different from those of the kings who ruled before him.

In the time of a priest-king like Mohammed there were bloody wars which were fought for the purpose of making people accept a religion in which they did not believe; a soldier-king like Napoleon fought for conquest and military glory; while the governments of a few men, called aristocrats, who were born to their positions of authority, plunged the nations into untold misery simply to satisfy a family grievance, a family spite, or a family ambition. This was a war "of honor."

But today the government of the priest-king, the soldier-king, and the aristocrat has ended everywhere. The man of arms, the man of God, and the man of birth all have some voice still in the councils of the nations, but the greatest share of power today belongs to the business man—the man of wealth.

Why the Business King Fights.

Just as the other kings all had their own special reasons for fighting, so the business king has his special reason. He does not fight for glory, or religion, or honor; he fights for some commercial advantage—in other words, for gain.

War with him is an investment, and he will never spend money killing people unless he can get it back in some form or other, either by acquiring new lands to develop, new markets for his goods, or new homes for his people. But when he has to spend a billion dollars in fighting about a piece of property that he may not be able to get after all, the business king is very likely to think that the game is not worth the candle. He is very

much inclined to wonder if he cannot settle his dispute with the other business king in some other way than by going to war.

The Hague Conferences.

Nicholas, Czar of all the Russias, found the way in 1898. He called upon the nations of the earth to meet for the purpose of ending war, and, as a result of their deliberations, which were held at The Hague, Holland, the International Court of Arbitration was founded. Another conference was held in 1907, and a third will be called some time before 1915.

The International Court of Arbitration consists of 72 judges, of whom each nation interested may select not more than four members. When a dispute arises, either side may call upon the court to judge of the merits of the case. The other side may refuse to arbitrate, but, if it does so, it must take the entire responsibility for bringing on war; and very few statesmen are willing to brand themselves as willful murderers.

When the case comes up for trial, each side picks out an equal number of judges, and then the judges all agree on still another judge who is mutually satisfactory. In this way there can be no tie vote. The case is settled according to the laws of justice, exactly as if it had been brought by two private individuals. The relative size and military strength of the two nations involved are considered no more than our Supreme Court considers the respective wealth of the parties to a suit which it is called upon to decide

The Work of the Peace Court.

Since The Hague Court was established it has settled some 300 cases, and in not a single instance has any nation broken its pledge and gone to war. The late Justice Brewer said, "The Hague Court will never need an army to enforce its decisions." This is probably true, largely for the reason that the nations are finding it cheaper to lose by arbitration than to win by war—expensive war.

In addition to establishing a Peace Court, the world peace conferences have broadened the code of law which every nation must observe in its dealings with other nations; they have made war less brutal by such measures as that forbidding the bombardment of unfortified towns, and they have removed one cause of war entirely by forbidding any nation to collect debts from another nation by force. A prize court has also been established, the object of which is to see that private property shall not be unjustly seized in war-time.

The Progress of Arbitration.

The nations welcome arbitration. Nearly one hundred arbitration treaties were signed within six years after the establishment of The Hague Tribunal. Others have been signed since. The United States alone has concluded twenty-eight such treaties. That means that we shall stay at peace with half the world. These treaties are just as binding between nations as are private contracts between individuals.

Of course, there are some questions which are excluded from the jurisdiction of The Hague Court. Nations will not argue about questions of honor or religion or glory today any more than they would when the priest-kings and the soldier-kings and the aristocrats made these disputes the subjects of so much war. But these matters seldom disturb the world's peace in our times, for the nations seldom feel deeply enough about them to fight over them. Almost always there is some business reason, some dispute about property, gains, or profits back of every modern war, and questions like these can always be taken for settlement to The Hague Court.

"The Christ of the Andes."

There are, however, some instances in which nations have agreed to submit everything to arbitration. The relations between Chile and the Argentine supply one such instance. In 1899 these two countries were on the point of flying at each other's throats to settle a dispute about their boundary line. Owing to the

efforts of several pious bishops of the Roman Catholic Church in both countries, the quarrel was arbitrated, and, as a sign of eternal peace between the two countries, a beautiful statue of Christ, 26 feet high, was erected at the Andean boundary, with the motto:

"Sooner shall these mountains crumble into dust than Argentines and Chileans break the peace to which they have pledged themselves at the feet of Christ the Redeemer."

As a further instance of compulsory arbitration of all questions, the five little republics of Central America have agreed to leave all their quarrels to an umpire, whose decisions are to be enforced on the disputants by the United States and Mexico.

One nation, at least, has voluntarily reduced her armament. The Republic of Colombia ten years ago had the largest standing army in the world in proportion to population. When Rafael Reyes came into power he cut the army in two and put the soldiers whom he still retained in the service of the state to building roads and sanitary work, to developing the railroads, and to improving the telegraph system. The money he saved on war expenditures he devoted to education. The result of these reforms is that today Colombia has three times as many schools as she had in 1900, while her telegraph service is said to be better than ours.

The Darker Side.

On the other hand, the darker side of the picture must not be forgotten. If more disputes are being arbitrated, the nations have not yet stopped their ruinous expenditures in preparing for war. Today the army and navy of a first-rate power, even in time of peace, cost more than they did when it was engaged upon a struggle for its very life. Every one who reads the papers knows that England and Germany are running a race to the poor-house in the efforts that each country is making to have a bigger navy than the other. Russia intends to spend $375,000,000 on her navy between now and 1920. Notwithstanding the Christ of the Andes, Argentina is laying down the two biggest battleships in the world—leviathans of 27,000 tons. Even China is entering the villainous competition. Yin-Tchang, former minister to Berlin, and now China's minister of war, announces that he intends to make every Chinaman do military duty. China has a population of 400,000,000, and, on this basis, her standing army, in time of peace, will reach the colossal total of about 6,000,000 men!

In the United States, which, for most of her history, has been the most peaceful of the great nations, population has increased twenty-fold in the last hundred years. Our outlay on war and warlike preparation has increased 230-fold—more than ten times as fast as our population. Our navy costs seven times today what it did twenty years ago.

Obviously, if this rate of increase continues, this earth could be turned into a solid ball of gold, and still the nations could not meet their war bills. These expenditures can be stopped in two ways—either by a tremendous war, that will leave all mankind in beggary, too poor to fight again, or by signing treaties of arbitration between all nations, and then disarming. In other words, we may soon have to choose between peace with honor or peace with bankruptcy.

"Peace With Honor."

Observances like that of Peace Day will help us to choose peace with honor. It will educate our future law-givers, voters, and business men to stop regarding war as the noblest of professions and the military leader as the greatest hero. It will train them to love peace, hate war, and despise the jingo. When a sufficient number of people will war to end, it will end, for eventually the people always have their will in any country and under any government.

REMINISCENCES OF A RETIRED EDUCATOR

BY RICHARD ELLIOTT, M. A., L. H. D.,

Sometime Headmaster of the Royal School for Deaf Children, Margate, England

II

LIFE IN THE ENGLISH PROVINCES

THE church had been built and endowed by the then Bishop of London, Dr. Bloomfield, who also built schools for boys, girls, and infants in connection with it. This provision of schools in conjunction with a church was in accordance with the arrangements usually followed at the time. Elementary education, which we have come now to look upon as a state necessity, was then reckoned generally as a matter of little or no concern of the nation at large. If the church had not exerted itself to provide it, the mass of the people would have been practically left without it. The cost of its maintenance became a heavy burden on the clergy, who made themselves responsible, and it became a constant struggle to keep the schools up to anything like a state of efficiency. They endeavored to get the needful funds by subscriptions, sermons, and the children's payments.

A Clerical School.

The clerical manager of the school in which I made my *debut* as a teacher was an exceptionally kindly and able man, and had a great desire that this part of his parochial duty should be discharged successfully. The building and equipment provided were as good as, perhaps superior to, those then generally found. Judged by present standards, they would, of course, be considered as sadly defective. The modern requirements as to space, lighting, apparatus, etc., were not then invented or required. In the provision of teaching power the supply was lamentably deficient. A very intelligent, well qualified, hard-working schoolmaster did wonders; but the nearly one hundred boys in daily attendance when I came to assist could not be taught with any satisfactory degree of efficiency by one man, however energetic he might be, having only such help as children in the school itself, as "monitors," could give.

It was with the view of strengthening the teaching that I was engaged as assistant. We worked strenuously and harmoniously together for about six months; the numbers increased up to and beyond the capability of the accommodation; every available portion of the space was occupied—the circumscribed area of the cap-room even being requisitioned for a class. But the expense involved by the extra engagement proved greater than the pecuniary resources of the school in the opinion of its financial manager, and my engagement was terminated with a very flattering expression of his good opinion of my services and the gift of a valuable Commentary on the Bible, still in my possession.

Early Railway Travel.

I returned to the National Society's Central School to await my turn for another appointment. I had two temporary posts, each for a few weeks, in the midlands, and in going to them took my first railway journey of any length. Railway traveling at that time was far different, in the way of speed, comfort, and accommodation from the present standard. The "Parliamentary" train—*i. e.*, the one run in accordance with the Act of Parliament to every station once a day, at a penny a mile—started at an early hour in the morning; the carriages one traveled by were dark and shaky, and the seats—apparently of the hardest wood procurable—were arranged in the most uncomfortable way, with the smallest amount of space possible for the knees. Doubtless this, with all of what

we should now call the discomforts, was a distinct advance on the former stage-coach traveling which prevailed somewhat before my time.

Whether this was so or not, the trip I took in the early part of this year was in striking contrast to the present luxury of travel on the great lines of railway. In the first place, to catch the "Parliamentary" at 6 a. m., a long journey in an open conveyance to the terminus had to be taken, and then there was the leisurely rate of progression, stopping at every station on the way, which was made apparently much longer by the uncomfortable seating.

But as one's ideas in the way of traveling had not then been educated up to the present point of progress, we were fairly contented, looking upon such circumstances as we met with as unavoidable.

Lost at Journey's End.

On the present occasion, going to a small station on the Trent Valley Railway, my experiences were extended beyond the actual railway journey itself. On arriving, I found no house but the station in sight. I was the sole passenger that alighted; there was no conveyance obtainable to my destination, three or four miles away, nor any means of sending on my belongings, so that I must be my own porter. I was directed over a plowed field as a short cut, and promptly lost myself. I kept on, encumbered as I was, but got farther and farther into solitude, trespassing in a most illegal manner. At last, in the distance, I saw a man plowing, and, making my way to him, asked his assistance or direction. The latter only he was able to give, and in time my tedious journey came to an end. I have a vivid recollection of this trip, which I mention in illustration of the difference, in this respect, between the present and the past. In former times a comparatively short journey such as this was not looked upon lightly, nor was it taken without a possibility of a considerable amount of discomfort and inconvenience.

I was now in the position of village schoolmaster-elect at the pretty little village of Newton Regis, and, had matters been suitable, might have been duly installed for some time. The school was a mixed one, and the staff consisted, in addition to myself, of a young woman from the village, who assisted generally and taught the girls sewing.

The building had been lately erected, at the expense of the "Squire," and was roomy, substantial, and convenient, but not ornamental. The stipulation had been expressly made, I was told, that anything of the nature of the latter should be strictly avoided.

Among the school apparatus was a full-sized spinning-wheel of the ancient orthodox fashion; instruction in its use was part of the girls' school work. This survival of an almost lost occupation was due to the requirement of the "Hall," where, with the laudable desire to provide employment for the female cottagers, it was the rule that all the household linen should be made in the village.

Everything seemed agreeable but the arrangements in the way of accommodation for the schoolmaster. I allude to these as an example of the estimate in which education and those who worked for it were then held in the country districts.

Bachelor's Hall.

A small cottage was provided as a residence, consisting of one brick-floored room down-stairs, with a sort of small scullery attached, and similar apartments upstairs. The living-room had a large fireplace and settle, in which latter was an immense oven, where, I suppose, it was contemplated the schoolmaster should bake his bread, as I believe the former occupant had done. Attached to the house was about one-quarter of an acre of garden in apparently a good state of cultivation. The schoolmaster was to furnish the house, and assistance would be given to him to do so.

The absurdity, as it would be considered now, of expecting a youth to undertake for himself in this way did not seem to strike any of those who urged him to try it. But I felt the trial to be beyond my powers, and, after about

three weeks in the village, I found myself again on my way south.

My work here had been a pleasant introduction to scholastic life in a village, and was of a type which doubtless has now passed entirely away.

The Village Church and Its Chimes.

Among the things which dwell in my memory in regard to it are the old village church and its Sunday services. The former was most interesting, the more so as nothing in the way of "restoration" had been attempted. It was unadorned, except in its own satisfactory design and by the evidences of hoary age. It looked like a handsome barn. The call to worship was given by three bells, one of which was cracked. This did not, however, prevent its being continually and most conscientiously used, its dreadful dissonance being apparently unnoticed. The choir, seated in a gallery at the west end of the church, consisted of five or six musicians, the performers on a violin and a clarionet being the most prominent, and they led the psalmody in a hearty, if somewhat inharmonious, way.

One Clergyman's Sacrifices.

After a time spent in London another opening occurred, and I became schoolmaster at the small village, or rather hamlet, of Polegate, in the south of Sussex. The school-room here had been built by the exertions of the vicar of the market-town, and was used by him for Sunday evening service, which he himself conducted. The maintenance of this school, for the benefit of the scattered population around, is an instance of the sacrifices often made by the clergy in the cause of education. The vicar had himself a large family, and the "living" was by no means a rich one, but this school, in an outlying part of the parish, received but £3 per annum for its support from any but himself. My stipend could not but be a modest one under such conditions; but, apart from this, the attending circumstances were not such as to make the position a comfortable one.

The children, boys and girls, about thirty in all, were interesting to teach, and the place was pleasantly situated, in view of the bold, bare outline of the South Downs. But part of my duty was to teach, morning and afternoon, in the Sunday school connected with the parish church, five miles from my lodgings, and to accompany the children to church. This involved a long walk on Sundays, for there was no possibility of riding. As the vicar himself did the walk to my school every Sunday evening to conduct service there, one could hardly expect to be released from the duty, and I was told my services were too valuable to be dispensed with on that day. It happened, too, that the weather that year was extremely wet and boisterous. My lodgings lying off the main road, the lanes and footpaths which led to them were frequently flooded, and not a few times I had to wade through water up to my knees on my way to and from school. In the quiet little village there was no companionship beyond that of the kind-hearted old-fashioned couple with whom I lived. My position was not endurable for very long, and I terminated my engagement at the end of the year.

The Haunts of One-Time Smugglers.

Notwithstanding the drawbacks with which my stay here was beset, I was able to see a good deal that was of interest in the neighborhood. It had been, during the Napoleonic wars, a noted smuggling locality, and my host had many tales to tell of events connected therewith that he himself had witnessed in his early life, and he pointed out houses, too, built with ample storage for contraband goods, still existing, and localities which were the scenes of the incidents narrated.

My next venture was to a village school of about forty boys, near Sevenoaks, in Kent. I think I was fairly successful in its management, notwithstanding my youth. The village, called the Weald, is very prettily situated on the southern slope of the ridge on which Sevenoaks is situated, and is about two

and one-half miles from that town. I met with some nice people there, and the vicinity of a small but important town was advantageous in many ways.

A schoolmaster's association was started, and it was carried on with that energy and enthusiasm which new movements of the kind usually call out. Opportunities were thus supplied for useful and pleasant intercourse, always welcome between those engaged in similar pursuits. We were, even in those remote times, intensely in earnest, and, although in comparison with the present ill provided, ill paid, barely recognized by the general public, we were yet thoroughly imbued with a feeling of the dignity and importance of our work, and were impelled by the earnest desire to use our best efforts to carry it out as effectually as was possible.

We had pleasant meetings, necessitating long walks, sometimes drives, to get to them, for the schools at which we met were widely scattered, and, although such qualifications as now obtain were neither invented nor required, and few, if any, of us would be deemed competent by present requirements, we yet had the temerity to tackle and thrash out thoroughly, as we believed, all the burning educational questions of the day.

The remembrance of the trips taken, of the long walks through the beautiful country, of the social part of the meetings, of the music, and of the animated discussions is extremely pleasant to me, and I cannot help alluding to them as some of the most happy of my reminiscences.

I commenced my new duties in rather an uncomfortable way, but my experience of traveling, such as this, was perhaps not uncommon at the time. I mention it in passing as throwing some light on the circumstances of the times, although it may not be strictly educational. I was advised, at my engagement, to go to Sevenoaks by omnibus as the best and cheapest way. The distance was twenty-five miles. There was then no railway to the town; the nearest station was seven miles from it, and that itself was then forty-one miles from London. This isolation was due, I believe, to the successful resistance of the inhabitants of the neighborhood to the project of making the course of the railway to Dover to pass through or near their town.

Coaching in a Snow-Storm.

I started on an afternoon in February. Snow soon began to fall and, continuing all the journey, the roads became very heavy, and we had great difficulty in making our way. The cold was intense, and the journey was protracted to the wearisome length of eight or nine hours. When at length we arrived, I found two of the schoolboys in waiting for me, who had been sent to meet me. A conveyance to the village, nearly three miles away, was, under the circumstances, quite unprocurable, and we had to trudge through the deep, untrodden snow, through what seemed to be a wood, but which was really the common. We were accompanied nearly all the way by vivid lightning. But a good fire and a warm reception in the lodgings which had been taken for me compensated for the discomforts of the journey, and the next morning, which was Sunday, I commenced duty in the Sunday school and in church.

(To be continued.)

THE EARTHQUAKE PROPHETS

A CURIOUS commentary on ƱI present state ƒ3 our knowledge ƒ3 ƱI meaning ƒ3 seismographic movements is furnished in ƱI newspapers ƒ3 January 23d. ƱI seismographs ƒ3 Washingington, St. Maur (France), and Albany, N. Y., simultaneously recorded a severe earthquake at some distant point. ƱI Washington scientists from their reading ƒ3 their instruments locate this point at ƱI northwest probably in Alaska; their French confrères with equal wisdom place it to ƱI southeast in ƱI Armenian Caucassus, and these ƒ3 Albany in Central America to ƱI south. From none ƒ3 these countries however has come word ƒ3 trouble, but Iceland to ƱI north reports severe shocks!—M. G.

THE READERS' FORUM

LIVE QUESTIONS DISCUSSED FROM EVERY VIEWPOINT BY THOSE MOST INTERESTED—ALL LETTERS MUST BE SIGNED

HOW THE APRIL "REVIEW" WAS RECEIVED

So many readers of THE REVIEW *wrote in, at Mr. Fairchild's solicitation, giving their impression of the April number, that it soon became impossible to answer all of the letters personally. All received careful consideration, however, and grateful acknowledgment is made herewith to all of our correspondents, who, it is hoped, will continue to show in like manner their personal interest in their magazine. Some of the criticisms received were adverse; but the great majority of them heartily endorse the revision of editorial policy; and tangible proof of their sincerity was shown in the large number of nominations received. One member sent in five applications for membership, with dues accompanying, in less than a week. A few of the April criticisms follow.*

A Magazine for the Hard of Hearing.

TO THE EDITOR:

Please allow me to congratulate you upon the pleasing form of this issue of THE REVIEW. There is no doubt that the popular department will be a success, and I am sure that every intelligent instructor of the deaf will appreciate the necessity of interesting the general public in our work.

I have often wished that the magazine were not so exclusively technical as to preclude the hard-of-hearing from enjoying it. They form a very large class, and while I have found that they cannot endure to be numbered with the deaf, I have also discovered that when they have overcome their aversion they are apt to be very much interested in the work that other deaf people are doing.

It seems that they will more easily be moved to subscribe to a paper of wide general interest than one devoted exclusively to technical matters. I shall endeavor in every way to further the new departure by speaking of it to my pupils in lip-reading.

Very truly yours, A TEACHER.

From the President of a Suffrage League.

TO THE EDITOR:

Allow me to congratulate you upon the first number of THE VOLTA REVIEW, and to express my appreciation of the fact that Woman Suffrage was one of the topics noted in the "maiden issue."

Yours most sincerely, —— ——.

"Circulation Ought to Increase Tenfold."

TO THE EDITOR:

The change in the magazine from Association Review to VOLTA REVIEW, and the complete change in contents, impresses me as a decided improvement. The magazine will now be of infinitely greater general interest and ought to increase in circulation tenfold, if not a hundred.

Sincerely yours,

A SCHOOL SUPERINTENDENT.

"Interesting to All Who Read It."

TO THE EDITOR:

I have looked over the magazine carefully, and must say that I am decidedly pleased with the change. It has in no way detracted from the technical part of the publication, and on the other hand has made it an interesting magazine to all who read it, whether teachers of the deaf or not. I believe it will be the means of interesting in the education of the deaf many persons who know little or nothing about it at present.

I shall look forward with pleasure to each publication if they are as interesting as the first copy.

Yours very truly,

STATE INSPECTOR OF SCHOOLS FOR THE DEAF.

From an Editor in Another Field.

TO THE EDITOR:

Three cheers for THE VOLTA REVIEW. I am sure it will succeed. It should go to every family where there are deaf people, and from that it will surely grow in favor with many readers who are always glad to learn of well-digested facts.

Congratulating you most heartily upon your splendid REVIEW, and wishing it the success it deserves,

I am, yours faithfully,

—— ——.

"A Remarkable Change for the Better."

TO THE EDITOR:

At the request of Mr. David Fairchild, I write you in regard to the Association Review. I was struck with the decided improvement in THE REVIEW, and want to congratulate you most heartily upon the remarkable change for the better. I take pleasure in sending Mr. Booth some names for membership, which I hope will bear fruit.

Yours sincerely,
A STATE SCHOOL SUPERINTENDENT.

"Much More Useful, Even to Teachers."

TO THE EDITOR:

In answer to your letter of April 6, I was much pleased with the initial copy of THE VOLTA REVIEW. I fully agree with the foreword of Dr. Bell, and think the magazine can be made much more useful, even to teachers of the deaf, by the present plan.

With kindest regards, I am,
Very truly yours,
A STATE SCHOOL SUPERINTENDENT.

The Professional View.

TO THE EDITOR:

Don't let THE VOLTA REVIEW become so popular that it loses all professional interest, for the deaf and their interests is the nucleus around which you must work. The first issue is too general in its scope.

Very truly yours,
A SCHOOL PRINCIPAL.

A Protest and an Apology.

TO THE EDITOR:

Permit me to remark that I do not think you will succeed in making THE VOLTA REVIEW "a popular magazine that everybody will desire to read" (quotation from editorial foreword) by offering a gratuitous insult to a few of your patrons (Catholics) in stating that "the devil worship of Lamaism bears a startling resemblance to the ritual of the Roman Catholic Church."

Yours very truly, —— ——.

(The sentence in question appears under the frontispiece of the April number. The editor is extremely sorry that it should be subject to such a construction as that placed upon it by his correspondent. Owing to the fact that the writing of "captions" to accompany pictures demands that a great deal be said in very few words, the sentence was unduly compressed, and while it did not appear exactly as quoted in this letter, yet it can readily be so interpreted. A complete and unmistakable contrast between the two religions was intended.—ED.)

The "Deaf-and-Dumb" and the Census.

TO THE EDITOR:

Permit me to call the attention of the Association's Census committee to a glaring blunder made in the present compilation of statistics of population. The Census enumerators have been instructed to ask this question of the head of every family in the United States:

"Is any member of this family blind (both eyes) or deaf-and-dumb? If so, give name and state which."

This is the old form, which has not been used since 1870, and we must expect worse results than those obtained in the earlier censuses on account of the large number of deaf persons in the country who have been taught to speak and who will not return themselves as "deaf-and-dumb." To teachers of the deaf it is a very serious matter, for they rely almost exclusively upon the Census Office to supply them with the names and addresses of deaf children who should be brought under instruction.

Now, parents of deaf children, as a general rule, do not know, or will not recognize, that their children are deaf-and-dumb until they have reached a considerable age, and the experience of the past has proven that where the "deaf-and-dumb" are asked for, the Census returns are remarkably deficient in the proportion of young children returned.

In 1890 and in 1900 the Census experts ascertained the proportion of deaf mutes by inquiries which first established the number of deaf and then revealed the age at which deafness occurred. Now it seems that all this arrangement has been upset, and I fear it is now too late to remedy matters. The returns of the enumerators afford the only basis for a special examination of the blind and the deaf. We shall have to wait several years before the returns of these classes can be specially examined, unless it should turn out to be the case that the enumerators have been instructed to prepare a special schedule on which the names of blind and deaf persons alone appear. We shall have to wait until the millions of names of other persons have been reported upon before we can even begin the special examination of the blind and the deaf.

Even if special schedules are provided we cannot go outside of the returns and supply omitted names. It is absolutely certain that the returns will be deficient at two ends of the scale. The young children we wish to reach will be very poorly returned, and the adult deaf, who have been taught to speak, will be omitted in a large proportion of cases because they will indignantly repel the insinuation that they are dumb as well as deaf.

Can our Census committee do anything?

Very truly yours, —— ——.

CONTEMPORARY THOUGHT

OPINIONS OF LEADING FOREIGN SPECIALISTS, AND RESULTS OF RECENT INVESTIGATION ABROAD

Edited by Prof. ANDERS HANSEN, Direktor, DEN KONGELIGE DÓVSTUMMESKOLA, NYBORG, Denmark, with Occasional Contributions by Prof. F. COLOMBO, Instituto dei Sordomuti, Milan, Italy

A Theory of Gesticulation.

The Blätter contains an interesting article concerning the origin of the extensive use of signs by the Jews of east Europe. Herr Reushort, of Berlin, has recently concluded an extensive study on the sign language of the deaf. He now explains that when writing that book, he deplored he could not find any sources which explained to his satisfaction the much-used gestures among the Hebrews of Russia and Galicia. Through further investigation Herr Reushort now has found an explanation that satisfies him. It seems that the orthodox Hebrew takes Biblical expressions in their most literal sense. When the sacred writer exclaims: "Lord, I beseech thee from the deep," this Hebrew constructs the floor of the praying place of the temple beneath the street level. And in fulfillment of the text: "O God, let my sins sink unto the bottom of the seas!" he selects a place for repentance and prayer close to the riverside, as may be seen even to this day where multitudes of the orthodox assemble in the busy heart of Berlin on the Spree island, close to the edge of the water, for prayer. In the exclamation: "All my bones shall speak," the author finds his main clue to the reason for the prevalence of signs. This text means that the whole man shall be filled with the essence of God. When endeavoring literally to execute the divine word at his prayers, thrice a day, the orthodox Hebrew is led to a system of gestures. For centuries the Jews were enclosed in the Ghetto; this circumstance furthered the use of the gestures which were originally only devised for religious purposes in the daily intercourse of this secluded community. When they went eastward and settled in the territories of Poland, Russia, and Galicia, they not only carried their dialect, the Yiddish—a mixture of Hebraic and other languages—with them, but also stuck to the gesture language. The inclination for gestures within the race is of atavic nature.

A. H.

Tele-Taction

At the Eighth National Conference of German Teachers of the Deaf, Instructor Lindner gave a most interesting presentation and explanation of his tele-taction apparatus applied in the instruction of the deaf. In explaining the invention, which he for the first time exhibited publicly, he modestly said: "Nobody better than I myself knows the failings of this apparatus, which I, however, hope to get further improved and simplified. Through this device a new path has at least been indicated to facilitate the burdensome task of educating the deaf." Herr Lindner has applied the principles of the microphone in constructing his apparatus. The metallic membrane is adapted for the perception of deep-toned notes, consequently it reacts well when an *a* is pronounced, on the other hand, it does not react when the vowel sound of an *ee* is given. The electrodes are fastened to the index and the little finger of the pupil. When an *a* is spoken into the receiver of the apparatus a shock is felt in both fingers, but if an *ee* the shock is only felt in the index finger. And all the vowels with notes lying between these two extremities produce a series of differing tactile capacity which is of considerable auxiliary importance to the lip reader.—[Blätter für Taubstummenbildung.]

A. H.

Roetzer on Lip Reading.

At the last meeting of the Bavarian teachers of the deaf, Herr Roetzer, instructor in the Munich institution, read a paper on "Lip-reading," the paper dealing with the topic under five points:

I. Lip-reading is generally compared with a sort of reading-something-written. This conception is, however, not entirely correct. Lip-reading is based on more or less stenographically shortened mouth pictures, which are vivified through tempo, action, and mimicry. Their shape is not definite, but varies somewhat in relation to the speaker's peculiarities. Neither are the pictures separated, but run together.

II. Three things condition the mastery of lip-reading: 1, a possibly high skill in conceiving the mechanical mouth pictures; 2, a clear understanding of the resemblance between pictures of different sounds; 3, a strong faculty for combinations.

III. The resemblance of sound pictures is based on distinct laws, explained through the physiology of articulation.

(Continued on page 130.)

THE UNIVERSAL ALPHABETICS

CONDUCTED BY M. GARDINER

MONTHLY LESSONS IN MELVILLE BELL SPEECH SYMBOLS, THE MASTERY OF WHICH ENABLES THE STUDENT CORRECTLY TO PRONOUNCE ANY SOUND IN HUMAN SPEECH

KEY TO THE MELVILLE BELL SYMBOLS.

ɑʃ ɔɬ ɯʃ ɘlɯɜʃɯ ɘlɯ ʊʃɘɘɟɯɯ

Consonants.

ɒ	as	in	ɒʃ	pay	ʃɒ	ape	ɒʃɒ	pip
ɔ	as	in	ɔʃ	tay	ʃɔ	eight	ɔʃɔ	tit
ɑ	as	in	ɑʃ	K	ʃɑ	ache	ɑʃɑ	kick
ɘ	as	in	ɘɟɬ	beau	ɑɟɘ	cob	ɘʃɘ	bib
ɷ	as	in	ɷɟɬ	dough	ɑɟɷ	cod	ɷʃɷ	did
ɐ	as	in	ɐɟɬ	go	ɑɟɐ	cog	ɐʃɐ	gig
ɘ	as	in	ɔ]ɘ	tum	ɷ]ɘ	dumb	ɘ]ɘ	mum
ɷ	as	in	ɔ]ɷ	ton	ɷ]ɷ	done	ɷ]ɷ	none
ɐ	as	in	ɔ]ɐ	tongue	ɷ]ɐ	dung	ʊ]ɐ	sung
o	as	in	oʃ	hay	o]ɾ	high	oɬɘ	whom
ɔ	as	in	ɔʃ	whey	ɔ]ɾ	why	ɔɟɔ	what
ɘ	as	in	ɘʃ	weigh	ɘ]ɾ	Y	ɘ]ɷ	one
ɜ	as	in	ɜ]ɾ	fie	ɟɜ	off	ɯ]ɜ	laugh
ɜ	as	in	ɜ]ɾ	vie	ɟɜ	of	ɯ]ɜ	love
ɯ	as	in	ɯ]ɾ	thigh	ɔʃɯ	teeth	ʃɯ]ɤ	ether
ɯ	as	in	ɯ]ɾ	thy	ɔʃɯ	teethe	ʃɯ]ɤ	either
ʊ	as	in	ʊʃ	see	lʊ	ass	ɘlɔʊ	bets
ɯ	as	in	ɯʃ	Zee	lɯ	as	ɘlɷɯ	beds
ɷ	as	in	ɷʃ	she	lɷ	ash	lɔɷ	etch
ɷ	as	in	ɯɬɷ	rouge	ɷɷɬ	Jew	lɷɷ	edge
ɲ	as	in	ɲɬ	hue	ɜɲɬ	few	ɑɲɬ	Q
ɷ	as	in	ɷɬ	you	ɜɷɬ	view	ɘɷɬ	mew
ʊ	as	in	ɑʊɬ	crew	ɔʊɬ	true	ɔʊ]ɾ	try
ɯ	as	in	ɐɯɬ	grew	ɷɯɬ	drew	ɷɯ]ɾ	dry
ɯ	as	in	ɑɯɬ	clue	ɑɯʃɯ	clean	ɒɯɬɘ	plume
ɯ	as	in	ɐɯɬ	glue	ɐɯʃɯ	glean	ɘɯɬɘ	bloom

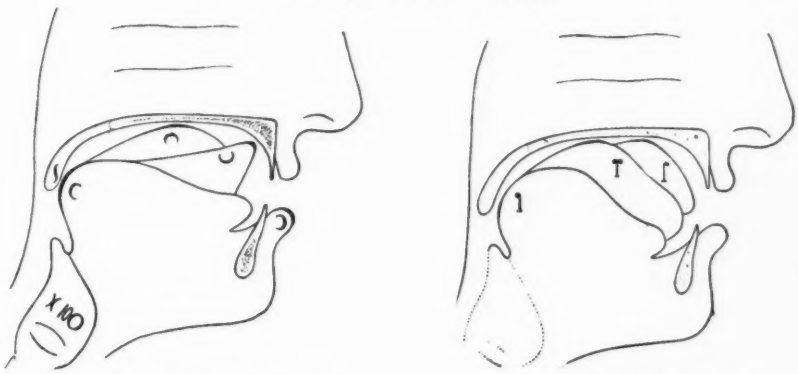
Vowels.

i	as	in	ɘiʊ	beat		eɪ	quay		ɒiɑ	pique
ɪ	as	in	ɘiʊ	bit		ɘiʊ	been		ɘiʊi	busy
ɾ	as	in	ɘiɾʊ	bait		ɾʊ	eight		ɔiɾ	whey
ɛ	as	in	ɘiɛʊ	bet		ʊiʊ	said		ɘiʊi	bury
ɛ	as	in	ɘiɛʊ	bat		ɒɯiʊ	plaid		iʊ	Anne
ɬ	as	in	ɒɬɯ	pool		ʊɬɘ	tomb		ʊɬɒ	soup
ɬ	as	in	ɒɬɯ	pull		ɘɬɯɜ	wolf		ɑɬʊ	could
ɬɬ	as	in	ɒɬɬɯ	pole		ɘɬɬ	beau		ʊɬɬɯ	soul
ɟ	as	in	ɒɟɯ	Paul		ʊɟɑ	talk		ʊɯɟ	jaw
ɟ	as	in	ɒɟɯ	Poll		ɔɟʊ	what		ɑɟɜ	cough
ɻ	as	in	ɘɻʊ	but		ʊɻɘ	some		ɯɻɜ	rough
ɻ	as	in	ɻʊɑ	ask		ɯɻʊʊ	last		ɻʊʊ	ant
ɹ	as	in	ɹ	ah		ɹɤɘ	arm		ɻʊʊ	aunt
ɪ	as	in	oɪɤ	her		ɘɪɤɘ	worm		ɘɪɤ	myrrh
ɻɾ	as	in	oɻɾ	high		ɻɾ	eye		ɛɻɾɯ	guile
ɻɬ	as	in	oɻɬ	how		ɘɻɬ	bough		oɻɬʊ	house
ɟɾ	as	in	oɟɾ	hoy		ʊɟɾʊ	noise		ɘɟɾ	boy

Glides.

ɜ	or	ɬ	a glide towards	ɜ	or	ɬ	; ʊɻɜ	or	ʊɻɬ	, now
ɤ	or	ɪ	a glide towards	ɯ	or	ɪ	; ɘiɤ	or	ɘiɪ	, beer
ɤ	or	ɟ	a glide towards	ɯ	or	ɟ	; ɘɻɤ	or	ɘɻɟ	, my

Basis of the Symbols.



BASIS FOR CONSONANT SYMBOLS. BASIS FOR VOWEL SYMBOLS.

N. B.—Those who desire to go more deeply into the subject of the Melville Bell Symbols are recommended to consult Dr. Alexander Graham Bell's lectures upon "The Mechanism of Speech," delivered before the American Association to Promote the Teaching of Speech to the Deaf. Published by Funk & Wagnalls Company, New York and London: Second edition, 1907.

The scientific use of the Symbols is explained in the chapter on "Methods of Studying the Mechanism of Speech," pp. 34-50. For "Method of Teaching the Symbols to the Deaf," see pp. 51-76.

(Continued)

PHONOGRAPHIC

Phonographic shorthand is the art of writing words by means of sounds. It is the most rapid method of writing that has been devised. It is used by reporters in taking down speeches, by secretaries in writing letters, by authors in writing books, and by students in taking notes. It is a method of writing that is easy to learn and easy to read. It is a method of writing that is easy to learn and easy to read. It is a method of writing that is easy to learn and easy to read

Holy, Holy, Holy, Lord God Almighty.

Holy, Holy, holy, Lord God Almighty !
Early in the morning our song shall rise to Thee ;
Holy, holy, holy, merciful and mighty,
God in three persons, blessed Trinity !

Holy, holy, holy ! though the darkness hide thee,
Though the eye of sinful man thy glory may not see ;
Only Thou art holy ; there is none beside Thee,
Perfect in power, in love and purity.

Holy, holy, holy ! all the saints adore Thee,
Casting down their golden crowns around the glassy sea;
Cherubim and seraphim falling down before thee,
Which wert, and art, and evermore shalt be.

CONTEMPORARY THOUGHT

(Continued from page 125)

IV. This resemblance of sound pictures must be made clear to the pupil. This is best performed by substitutions.

V. New sound pictures appearing in each lesson must be drilled on in a special series of exercises.—[Organ.] A. H.

DANISH TEACHERS MEET.

The sixth biennial meeting of the Danish Association of Teachers of the Deaf was held at Nyborg, Denmark, with Director A. Hansen, of Nyborg, chairman of the association, presiding.

The assembly elected Director Bech, of the School for the Deaf at Fredericia, as the Danish editor of the Scandinavian periodical, "Tidsskrift für Dôfstumskolan," in the place of the late director Koller.

Want Age Limit Lowered.

At the fifth meeting, held two years ago at Fredericia, a committee was appointed to consider the kindergarten question, and the chairman, Mr. Hansen, gave a short outline of what had been done in the meantime, especially through the investigations of the secretary of the committee, Mr. V. Larsen, of Fredericia. In committee the chairman had endeavored to convince his colleagues of the desirability of having the compulsory age limit lowered by one year, from eight to seven, and the compulsory term of eight years extended to nine years. At the Nyborg meeting he proposed the following resolution, which was unanimously carried: The sixth Danish meeting of teachers of the deaf recommend the lowering of the entering age limit for deaf children by one year, which shall be added to the compulsory term of instruction, thus making it of nine years' duration; recommend the establishment of a "home" for little deaf children living under unsatisfactory conditions, where they may be received before attaining school age; and recommend the distribution of printed instructions to parents of little deaf children.

A committee further to advance this resolution was appointed.

Dr. Forchhammer, of Fredericia, invited the teachers to appoint another committee to consider the advisability of altering the types of his phonetic-orthography, the details to be considered being too numerous to be discussed at a general meeting.

The Rev. J. Jörgensen then read an address: "The Christian Responsibility of the Teacher of the Deaf." The aim for the educator of the deaf must be to bring them into personal relationship to God, but to attain this high goal involves personal belief on the side of the teacher. He was unable to understand how any non-Christian dared to face the responsibility connected with the education of the deaf. He complained of lack of stability in the deaf in the matter of regularly attending divine service in the church for the deaf in Copenhagen, and he was inclined to think that compulsory attendance at the Sunday chapel service in the institutions for the deaf had something to do therewith, and he would recommend to let it be optional to the pupil whether he took part in such service or not. He regretted also that it was so seldom that teachers of the deaf attended the services for the deaf. He owned that this should naturally be practiced out of devotion for the former pupils and not for one's own personal sake, as the sermon was adapted only to the deaf, but he felt sure that if teachers, when visiting the Danish metropolis, would occasionally be present at the services with the deaf congregation, their example would lead many a deaf person to attend more regularly. The majority of the teachers disagreed with the speaker in the advisability of letting it be a voluntary act to be present at the chapel services on Sundays.

The Inner Life.

Director Hansen, of Nyborg, read a paper on "The Disciplinary-Educative Side of Our Task." Our work as educators of the deaf was double-sided: to provide the deaf with language and general knowledge to socially restore them to take rank in society, and simultaneously to train and develop their spiritual life. The first part was most conspicuous, and the people at large quite recognized the value of knowledge, which acknowledgment had crystalized in the popular saying, "Knowledge is power." The school should guard against being led astray by the current cry for knowledge and the ensuing power, for this does not mean really the highest blessing to the individual, many finely-equipped persons having gone down despite their store of precious knowledge because of want of moral power. Let us not forget the saying of the far-off epoch, "He who loveth his son chastiseth him early." The discipline of the old school days was harsh and even cruel to the modern mind, but too much grandfatherly leniency was a doubtful boon to the child: it did not develop backbone. Some modern pedagogues rather try to study the motives that lead the little sinner to commit offenses and to find out excuses. It is one thing to understand the child and quite another thing not; by all means at disposal try to check the inclination for committing offenses. Many a little deaf child has been partly spoiled through the too excessive forbearance of blind parental love, which has often produced a small tyrant. It is the duty of the school to uproot bad habits in the pupil, and if one means to secure this end fails, another must be tried—if gentleness proves without effect, severity must be tried. Although not a firm believer in the efficacy of corporal punishment, the writer had known cases where it had wrought wonders, and where it had been quite justifiable to execute such punition. But the moving power for all our acts in endeavoring to discipline and form the will of our pupils must originate not only in comprehension but in sympathy and true love. A. H.

NEWS AND COMMENT

HAPPENINGS OF GENERAL AND TECHNICAL INTEREST—HOW THEY APPEAR TO THE LAY AND PROFESSIONAL PRESS—ITEMS FROM OUR READERS SOLICITED

A Busy School.

The Mystic Oral School pupils now receive regular instruction in dancing from a professional teacher. The school has taken a forward step in introducing instruction in weaving, a loom having been set up at the school. The number of pupils at present, over fifty, is up to the capacity of the school and there are others on the waiting list.—[Deaf-Mutes' Register.]

Dr. McDermid en Tour.

H. J. McDermid, M. D., principal of the Institution for the Deaf and Dumb, of Manitoba, Canada, paid a visit to the Volta Building last month. Dr. McDermid was shown about the premises, and, after having heard the explanation of the new editorial policy for THE REVIEW, he expressed his approval of it. Dr. McDermid's visit to Washington was in connection with a tour of inspection which he is making for the purpose of investigating the various methods of teaching the deaf as practiced in the several institutions of the United States. He had already been to the Ohio and the Indiana Schools and to Gallaudet College, and from Washington he went to inspect the Pennsylvania Institution for the Deaf and Dumb, at Mt. Airy, Philadelphia, Pa.

Mrs. Monro's Summer School.

Mrs. Sarah Jordan Monro will hold a session of her summer school for the training of teachers from July 1 to July 29, 1910, at the Pierce Building, Copley Square, Boston. Special attention will be given to the mechanism of speech, the Melville Bell visible speech symbols, phonetics and word study, voice-culture, and rhythm. Mrs. Monro may be addressed at Room 518, Pierce Building, Copley Square, Boston, Mass.

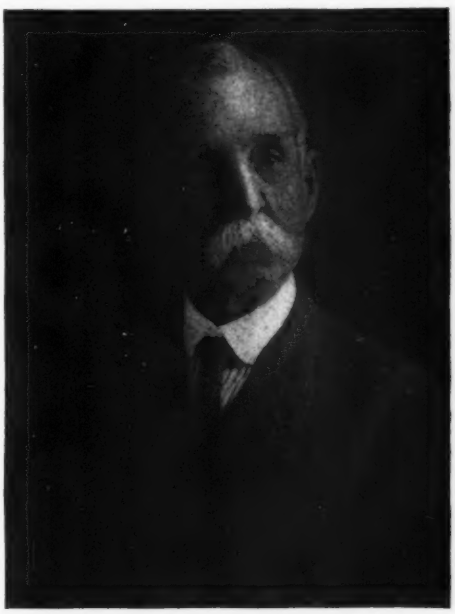
Training Class for Teachers.

The Institution for the Improved Instruction of Deaf-Mutes of New York city has made provision for a class of teachers in training, who are to number not less than four. Applicants for membership should be graduates of some reputable high school, normal school or college. All applicants will be required to pass an examination in common school subjects, and one year will be required to complete the course. All completing the course satisfactorily will receive a certificate and recommendation from the school for positions as teachers. Tuition fee will be $150, which entitles one to live in the institution without additional charge.

OBITUARY.

James Denison.

James Denison, who had retired as principal of the Kendall School for the Deaf at the beginning of this year, after completing a half century of service in that position, died at Washington, D. C., on March 20. Mr. Denison was born at Royalton, Vt., in 1837. At the age



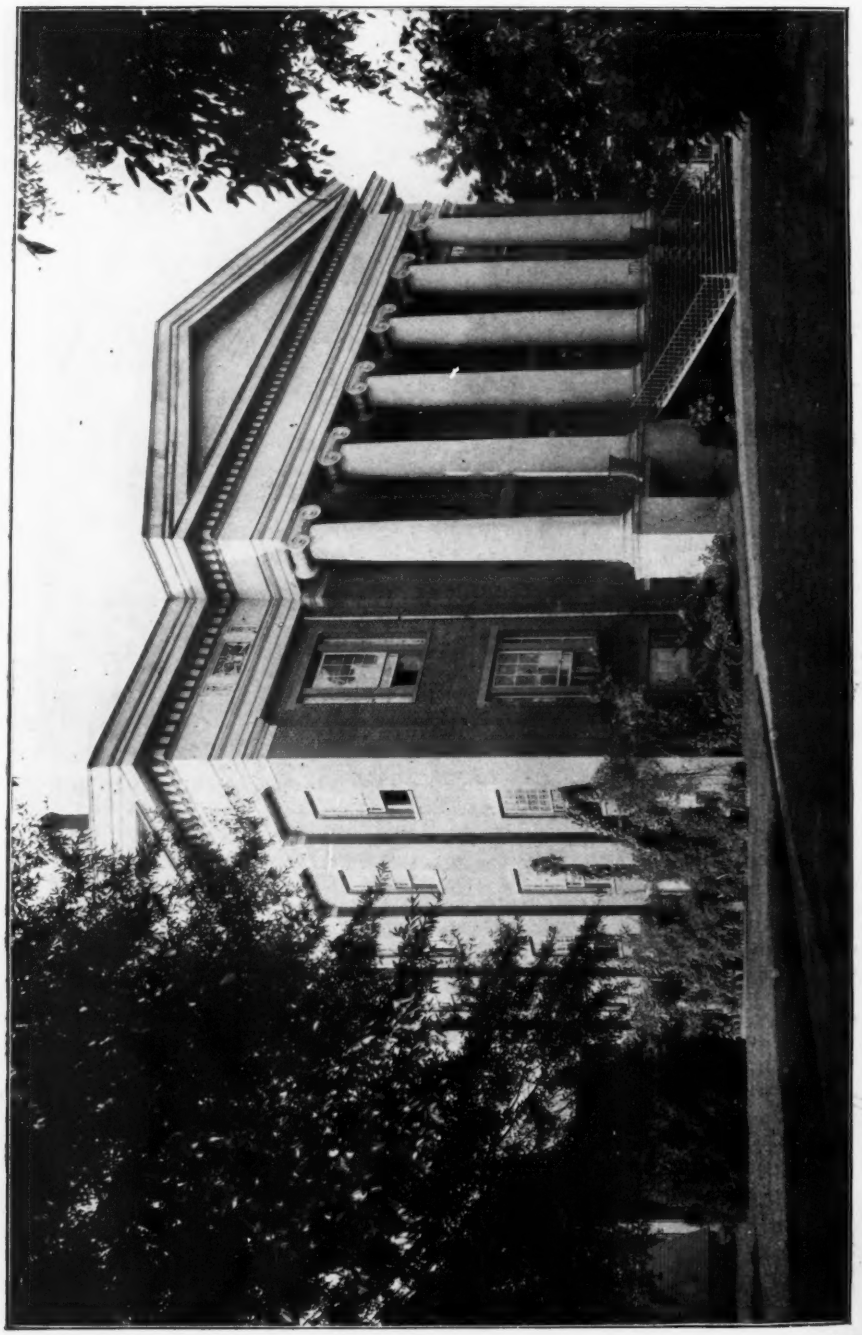
From The American Annals of the Deaf.

of ten he became partially deaf. The late Mr. Denison, after serving for a short time as teacher in the Michigan School for the Deaf, at Flint, Mich., came to Washington as head of the preparatory school of Gallaudet College. In that capacity he is said to have prepared more boys and girls for Gallaudet College than any other person living or dead.

Mr. Denison is survived by two sons, Lindsay Denison, the well-known journalist, of New York, and Dr. Raymond Chase Denison, of Bremen, Ind.

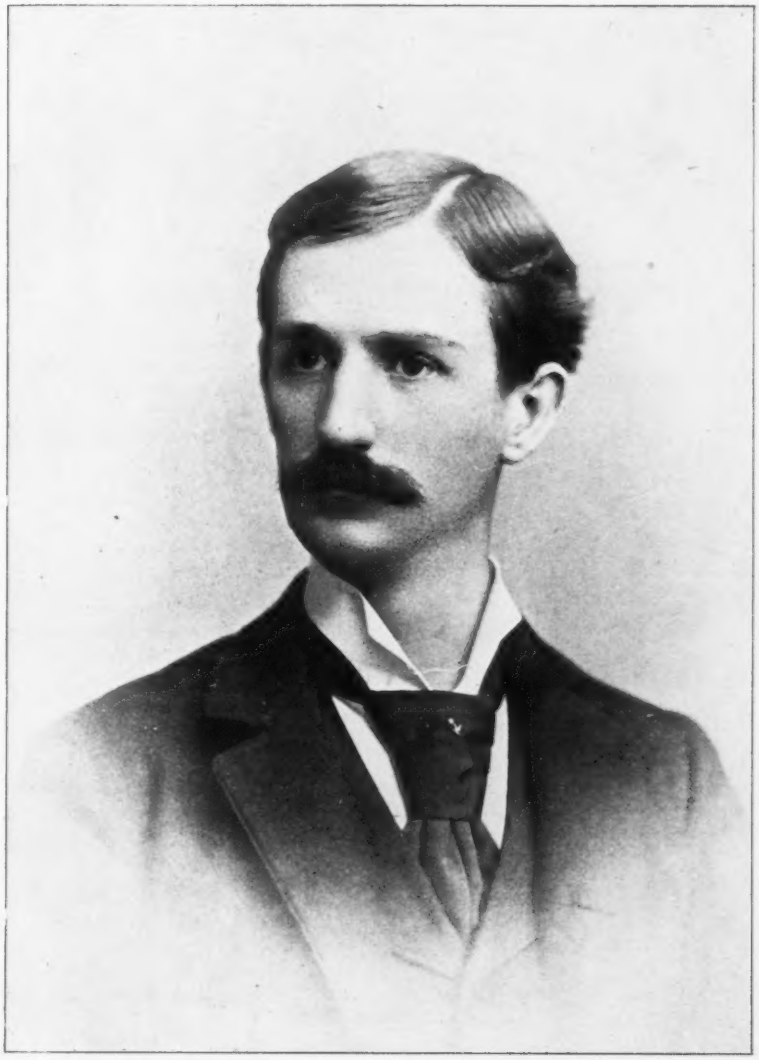
SOUVENIR OF THE ALABAMA SCHOOLS' BI-CENTENNIAL

Original Home of the Parent Institution—Now the Executive Building



SOUVENIR OF THE ALABAMA SCHOOLS' BI-CENTENNIAL

J. H. Johnson, M. A., Principal of the Allied Schools



MENTOR OF ALABAMA'S DEAF AND BLIND.

J. H. Johnson, M. A., has been principal of the Alabama Schools for the Deaf and Blind since 1894, when he succeeded his father, the late Dr. J. H. Johnson, founder of the institution, to that position. Three schools are under Dr. Johnson's charge, namely, the school for the deaf, and those for the blind, and the negro deaf and blind. Mr. Johnson's assistants number about 45, and the young people whom he is preparing for life in the three schools aggregate about 300.

Under Mr. Johnson's direction the school is constantly adding to its facilities, paying much attention to that part of the curriculum which is designed to make the deaf student a self-supporting citizen. The latest course to be added deals with farm methods.

Jacob D. Kirkhuff, M. A.

Jacob D. Kirkhuff, M. A., the oldest teacher in the Pennsylvania Institution for the Deaf and Dumb at Mt. Airy, Philadelphia, Pa., died on April 16 at the age of 74. Mr. Kirkhuff recovered a few months ago from a dangerous attack of pneumonia, but this was succeeded a few week later with peritonitis, from which he died, after an illness of about two weeks.

Mr. Kirkhuff was graduated from Yale in 1865, and was immediately appointed a teacher in the New York Institution for the Deaf and Dumb. For 44 years he had been on the faculty of the institution at Mt. Airy, of which Dr. Crouter is now principal. His marked personality, as well as his affable and sympathetic nature, contributed to the high regard in which his memory is held alike by his associates and pupils.

Alabama School Souvenir.

In reporting the observances of the Alabama School's Semi-Centennial, last month, it was our wish to print illustrations of the school and of its principal, but it was not possible to obtain the pictures before that section of the magazine went to press. The pictures are accordingly presented in this issue on pages 132 and 133. They originally appeared in the school paper "The Messenger," by the courtesy of which they are here reproduced in THE REVIEW.

The First "Bulletin International."

The Volta Bureau this month is distributing to the American subscribers the first "Bulletin International de l'Enseignement des Sourds-Muets." This is a paper-bound volume of 533 pages, divided into five parts, consisting, respectively of "Introduction," "Science et pédagogie," "Bibliographie rétrospective," "Bibliographie annuelle," "Nos revues spéciales," and "Liste des souscripteurs."

An authoritative article on lip-reading, by B. Thollon, professeur et surveillant général des études a l'Institution nationale des Sourds Muets de Paris, appears in French, Italian, English, and German. The "Bulletin," which it is planned to publish yearly, is issued at Grenoble, France, by a "comité d'administration," consisting of MM. Boudin, Drouot, Dupuis, Hervaux, and Legrand, professeurs a l'Institution nationale de Sourds Muets de Paris, and by M. Thollon.

Another Newspaper for the Deaf.

The Southern Optimist is the name of a Southern newspaper for the deaf, which is issued in Atlanta, Ga. Mrs. C. L. Jackson and J. H. Marchman are chiefly interested in the new venture. Associated with them are the Rev. J. W. Michaels and Herbert R. Smoak.

FOREIGN NEWS

By Prof. ANDERS HANSEN, Nyborg, Denmark.

Director Max Koller, of Munich.

The Blätter reports the death of Director Max Koller, of the Central Institution for the Deaf in Munich, Bavaria. For 40 years Dr. Koller had been in the profession; for the last two decades in the capacity of head of an institution.

In planning and writing language books and lesson books, he continually followed the maxim: "What do the deaf need in life for their intercourse with their hearing fellowmen?" His lessons were grouped around such subjects as: our food, clothes, house, railroads, mail service, monetary system, servants, etc., etc. The oral method found an enthusiastic supporter in his person, although his views on signs were more moderate than those of many leading instructors of his generation.

Through Dr. Koller's efforts a new building was erected to house the Munich institution. All the plans and details for its practical structure were suggested by him to the architects, and this building has served as a pattern for many other institutions, not only in Germany, but also abroad.—A. H.

A Compulsory Education Law Asked for in Holland.

The lack of a compulsory act for the education of the deaf in Holland has long been felt by the school authorities. Recently the directors of the institution for the deaf at Groningen sent in an application to the Queen, asking the preparation of such a bill. The applicants estimate the number of deaf children of school age not getting any education at all, owing to neglect of parents or guardians, to be about 10 per cent of the total number. The directors mention the first compulsory acts for deaf children, the very first being that which the Danish government for the province of Schlesvig-Holstein, then forming a part of the Danish monarchy, issued in the year 1805. In the year of 1817 a royal decree extended the act of compulsory instruction to all deaf children in the country. The several smaller states belonging to the German Empire, introduced compulsory instruction for the deaf in the seventies and eighties of the last century. Then came the Norwegian act of 1881, that of Sweden in 1889, and the English in 1891.—A. H.

Help for Flood Sufferers.

Edwin A. Hodgson, editor of the Deaf-Mutes' Journal, has forwarded 1,070 francs as a fund to aid the sufferers from the recent flood in Paris.

It is said that in Delaware there is no State provision for the education of the deaf.